The Turn Has Come!

THE world has turned from pessimism to optimism.

It has changed its methods of operations. It has turned from selling its commodities and stocks at below-cost and below-value to a rigid demand for costs plus profits.

The panicky liquidation of stocks, bonds, banks and financial investments came to an end. It has been superseded by a solid line-up of all producing and distributing divisions of commerce and industry for value plus profit.

The financial Hindenberg line of June 2nd held.

Gratifying advances had been made up to June 20th when there flashed across the vision of the world the pronouncement of President Hoover's moratorium on world war debts.

It needed just this miraculous, spectacular, solid economic event to change the sentiment of the world from depression to exultation, from selling to buying.

France alone of all the interested nations haggled over consent to the terms of the moratorium. That she could not hold out against a world convinced of the beneficence of the event was a foregone conclusion.

France has agreed to co-operate and the moratorium has become a working factor for the restoration of world confidence as of July 1st.

From this date forward, the world's work will be done on a changed, constructive basis. As President Hoover rightly says:—"While the plan is particularly aimed to economic relief, yet, economic relief means the swinging of men's minds to **confidence,** and the swinging of nations from apprehension of disorder and governmental collapse to **hope** and **confidence** of the future. **It means tangible aid to unemployment and agriculture."**

Take the last two factors, "aid to unemployment and agriculture." The way to aid unemployment is to put men back to profitable employment. Visualize what this will mean to the buying power of the world.

The "aid to agriculture" means the marking up of all products of the farms. Visualize what the increased purchasing power of 45 per cent of the inhabitants of these United States is going to mean to the markets of the world.

Of course, we don't know at this writing just what form this aid to unemployment and agriculture is going to take, but if our mental processes are not like frozen assets of a defunct bank, then we shall immediately set about to adjust to the new condition of affairs and the first step to take is to give our unreserved confidence and support to our leaders in the new era of construction.

The paper industry has needed leadership—now, we have it.

We are bid to have confidence: confidence in our country, confidence in our national leaders, confidence in each other and confidence in the operation of the everlasting laws which underlie every righteous action.

The only nation, people or individuals who will have a problem, from now on, are those who are unable mentally to adjust themselves to the marvelous turn of events.

Confident co-operation of constructive efforts will result in restored world prosperity.

The turn has come!

EDITORIAL

The Heart and Arteries of a Paper Mill

ONE does not need to tell a papermaker of the important part played by pumps in the industry. It would be difficult to name another industry that depends to the same extent on water as a conveying medium as does pulp and paper manufacturing. The pumping apparatus and the piping systems connected thereto have been well named the heart and main arteries of the pulp and paper mill.

Our thoughts have been turned in this direction in revising some data sheets on pumping apparatus, which were prepared by us for the convenience and guidance of manufacturers of pumping apparatus, in advertising to that large constituency of ours, which uses several forms of pumping apparatus.

The forms of pumps that are made use of in the paper mill proper, as well as in pulp mills, are of varying construction—from single or multi-stage centrifugal and reciprocating pumps to rotary vacuum pumps, and equipped with various designs of impellers, closed and open, with double suction effects; the centrifugal type of pump being generally employed for lifting and conveying pulp of ordinary density prior to running it on the wire.

When consideration is given to the great volume of water required in the different stages of the papermaking process, whether as a conveying element, or in the operations of grinding, cooking, bleaching, and conversion into steam for power purposes, the figure of the pumping and piping systems of a mill as the heart and arteries of the plant can be better appreciated.

Calculated in gallons of water per ton of wood pulp used there is, in the case of groundwood, some 50,000 gallons of water employed in the operation, while with chemical pulps the ratio rises to 150,000 gallons to one ton of pulp. With unbleached kraft pulp, the quantity of water used is relatively smaller, but not so low as with groundwood pulp, some 115,000 gallons being figured for kraft as well as for unbleached sulphite. When to these figures are added the quantities of water required for the conversion of pulp to paper, amounting to 30,000 or 40,000 gallons per ton of paper, some idea can be obtained of the enormous volumes of liquid which are handled in pulp and paper mills by means of pumps and pipes. In some of the pumping operations, stock is carried at a density of six per cent, to be discharged on the moving wire of the fourdrinier in a dilution of one per cent to a half of one per cent.

Our figures of water consumption are taken principally from the fifth volume of the series of textbooks on "The Manufacture of Pulp and Paper" and are regarded by some authorities as too low. It is conceded that in mills making an all-rag paper, much larger quantities of water are used per ton of raw material, one American mill being credited by Dr. Arthur St. Klein with a consumption of 4,500,000 gallons of water a day on the product, or 50 gallons for every pound of dry paper produced. German authorities are generally in agreement with the higher figures for water consumption, Klein giving the consumption of a complete paper mill as about 400 liters per kilogram, or roughly 100,000 gallons per ton. The variations may be expected to be great in individual mills and it would be a mistake, as Klein has pointed out, to take the average consumption figures of individual mills as a basis for estimating the water supply equipment of a paper mill.

Sulphite Cooking

THE article in this issue of THE PAPER INDUSTRY by Prof. Dr. Erik Hägglund of the Royal Technical University, Stockholm, is one that will be read and studied with care by sulphite engineers who are ambitious to keep abreast of the latest developments in the art of cooking wood with bisulphite solutions to get the greatest yield of cellulose.

The author of the article has made the subject a life study and the industry is indebted to him for numerous observations and discoveries of value concerning the reactions that take place when wood is cooked with solutions containing sulphur dioxide and sulphites of calcium and magnesium. As might be expected from a professor of chemistry, the terms used by him are in instances highly technical, but it is to be hoped that no sulphite engineer or cook will be deterred by this circumstance from following his experiments and determining for themselves how pulp yield and quality are influenced by increasing the proportion of lime present, or, as Professor Hägglund expresses it, by increasing the bisulphite ion concentration.

In ordinary systems of cooking, lignosulphonic acids are formed which cannot be removed from the pulp by washing with water, penetration of the wood by sulphite acid being also hindered during cooking by the formation in the chips of combinations of lignin with carbohydrates and the sulphonic acids of these compounds.

His investigations point to a solution of some of the difficulties which have been experienced by sulphite pulp manufacturers in their efforts to make use of spent sulphite liquor for the production of alcohol. While, as pointed out by him, a

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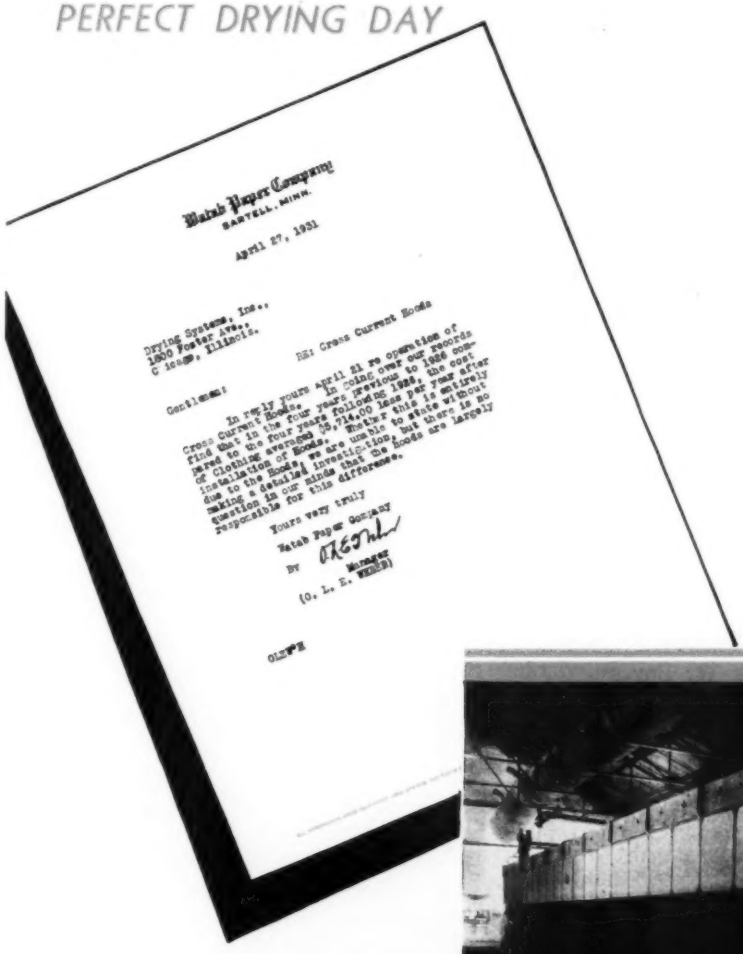


Watab Paper Company
SARTELL, MINN.

April 27, 1931

Drying Systems, Inc.,
1826 Foster Ave.
Chicago, Illinois.

Re: Cross Current Hoods

Gentlemen:

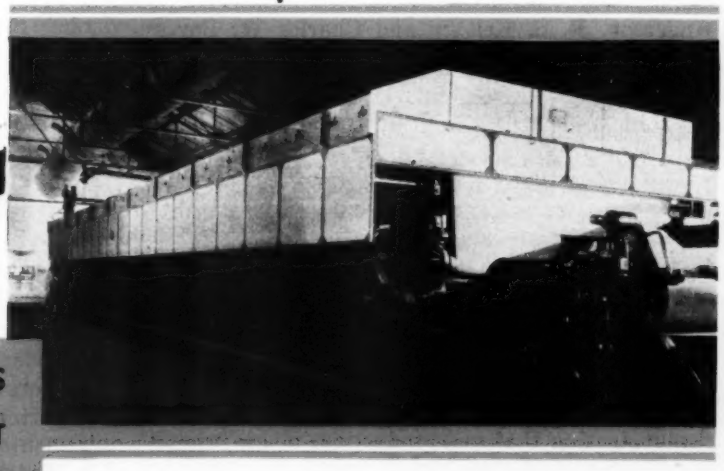
In reply yours April 21 re operation of Cross Current Hoods. In going over our records find that in the four years following 1926 our cost of clothing averaged $5,714.00 less per year after installation of hoods, as against the four years previous to the hoods, we are unable to state definitely due to the detailed invention, but there is no making a detailed investigation, but there is no question in our minds that the hoods are largely responsible for this difference.

Yours very truly
Watab Paper Company
By [signature]
Manager
(O. L. E. WATAB)

OLEPE

What the DRY-SYS Paper Machine Hoods offer toward the proper ventilation of your paper machines, you can learn from us, and prove by trial. But another paper manufacturer, who has made all of the practical tests, can speak without bias and thus with authority, from your own viewpoint.

It's not necessary to add further comment to the WATAB PAPER COMPANY'S letter after we point out that . . . DRY-SYS PAPER MACHINE HOODS . . . are engineered, fabricated and erected completely by DRY-SYS engineers.



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DRYING SYSTEMS, INC.

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CHICAGO ILLINOIS

E D I T O R I A L

high base content of the cooking acid improves the yield and quality of pulp, it brings in its train some decomposition of the sugars present, so that less fermentable material is available in such waste liquors. It is noted accordingly that the interests of the sulphite pulp manufacturer and those of the distiller of alcohol are opposed as regards the more desirable methods of cooking pulp.

The use of higher pressures is involved in the method of cooking proposed by Professor Hägglund, and this may be an obstacle to its commercial exploitation, since the question may arise whether the benefits to be realized from increased yield and improved quality would compensate for the expense involved in changing over to digesters different from those now used.

Position of Paper Industry in the United States

THE Timber Conservation Board in Washington, D. C., is at present engaged in taking the testimony of pulp and paper manufacturers and the officials of associations in the industry concerning present and future problems of pulp and paper production, and some of this testimony has been collated and published by the Pulpwood Department of the American Paper and Pulp Association in the June-July issue of its monthly bulletin called **Pulpwood.** The statements made by such men as George N. Ostrander, W. A. Munro, Ossian Anderson, R. S. Kellogg and Charles W. Boyce are of great interest as bearing on means for the stabilization of pulp and paper production in the United States.

The tendency of production as gauged by percentages of capacity has been downward during the period 1926-1931, and the cause of this, according to Mr. Ostrander, of Finch, Pruyn & Co., is to be found in the expansion of the newsprint industry in Canada, following the adoption of the reciprocity agreement of 1911, which abolished tariff protection to the American newsprint industry. In 1913, the importation of newsprint into the United States amounted to 500,000 tons, which rose to upwards of 2,000,000 tons in 1930, practically all of which came from Canada, thus demonstrating that overproduction in this branch of the paper industry had its origin in Canadian expansion.

A great deal of misinformation is in circulation concerning the available supplies of standing timber for the use of the paper industry in the United States. In 1907, when Governor Pinchot of Pennsylvania was chief forester of the United States, he predicted a complete exhaustion of timber resources in 20 years, but developments during the last decade consisting of improvements in pulping processes and the use of other woods besides spruce and fir, together with a more accurate knowledge of the stands of coniferous trees in the United States have happily upset his prediction and the fear of a timber famine no longer exists.

The situation in the Lake States as regards pulpwood supplies was described in reassuring fashion by Mr. Munro of the Munising Paper Company, who showed that most mills in that region are fairly safe for ten years under existing conditions and others for a much longer period. The tendency of production in the Lake States paper industry has been away from the cheaper and greater tonnage grades such as news, wrappers, etc., to better priced and lower tonnage grades like groundwood book, bleached sulphite papers and high-grade specialties. He noted marked overproduction in nearly all lines of paper, but chiefly in the lower grades, leading to a buyer's market for news, groundwood papers and kraft.

The Lake States mills are adversely affected by excessive competition from forest products manufactured in other parts of the country, which has led several mills to buy pulp instead of manufacturing it. Mr. Munro made a number of recommendations calculated to improve present conditions, a reform in the method of taxation of standing timber being considered by him of chief importance, as indeed it is by all paper manufacturers who maintain timber stands.

The outlook for development of the West Coast pulp and paper industry was pictured in a convincing manner by Mr. Anderson of the Puget Sound Pulp and Timber Company who gave figures of production and consumption, as well as importations of pulp and paper of all kinds into the United States. He recommended an intensive study of underlying causes for the relatively smaller consumption of domestic wood, particularly of wood grown in the South and on the Pacific Coast. "Foreign imports have been encouraged through our failure to realize that this country still has the largest stands of timber of any country in the world, sufficient to make us independent of foreign sources of this raw material forever if we would but use ordinary care in assuring suitable outlet for our domestic requirements." Continuing, he made the point that the United States imports 2,000,000 tons of pulp of all kinds, which the far western states and the South could produce under proper utilization and forest management. Without protection, however, it would not be safe to undertake this production. We allow pulp to come in duty free, while Canada and some of the European countries impose a duty on it, and this tells the story.

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THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. XIII JULY, 1931 No. 4

Will We Never Learn?

By R. M. CARLSON
Business Analyst, The Sherman Corporation
New York, Chicago and Toronto

This article is the first of a series that will be presented by members of the staff of The Sherman Corporation, dealing with merchandising, management and manufacturing improvement.

THE PAPER INDUSTRY is pleased to announce that by special arrangement, its readers are privileged to call on The Sherman Corporation during the term of this series, without cost or obligation, for counsel and advice on problems of management, manufacturing and merchandising, if such questions can be covered by mail or in person at the offices of The Sherman Corporation. Should problems arise which could not be so handled, the services of that organization will be available at a special rate.

SOME 66 eons B. B. (before Babson) one Peter Pilthdown slew a fair-sized bison, some five tons in weight, for the family luncheon. It made delicious meat, and all fell to with much smacking of lips. But even the healthy appetites of his six wives and numerous progeny failed to make much of a dent in the vast mountain of meat.

Six months before, his only course of action would have been to allow the carcass to lay where it had fallen, tearing away at it from time to time until finally the odor of decay grew too strong for even the insensitive nose of a cave man.

But about that time, he had entered into a new human relationship by trading his surplus meat for the conch shells which his neighbor collected in such abundance.

With a haunch of bison slung over one shoulder, he set out to barter his wares for the "glittering generalities" of his neighbor. Laboriously he toiled through the thickets to the entrance of his prospect's cave, the first traveling salesman of prehistory.

But alas, as our salesman-producer came near his neighbor's door, he discovered that competition had entered the trade of the world. For, walking away from the scene was Sammy Stonehenge, twirling a long string of bright shells, and leaving behind the still-warm carcass of an Eohippus.

Even his most tempting cut price failed to woo the desires of his prospect. Throwing away his unwanted wares, he proceeded to dispose of competition in a way which every present-day manufacturer would envy, as with tooth and claw he tore Sammy Stonehenge to shreds. Surely he had slain forever the specter of competition.

We all know, however, that he did nothing of the kind. Every stage of man's existence has had its example of senseless selling, attempting to force onto a market products which it cannot at the moment, consume.

The early trader of Egypt, trading his turquois scarabs for fine linens, found that once a family had protected itself from misfortune by acquiring one scarab, it was useless to try to force another on them.

The spice merchant from India, following his rival's footsteps, found that "bargain prices" were necessary if he was to dispose of his stock.

And the vendor of fine purple raiment found that the Grecian housewives could only be lured into buying an extra linen robe if prices were low enough to tempt them.

Yet for all these eons and eons of experience, mankind seems to be unable to learn the simple lesson that before a sale can be made, there must be a buyer.

Peter Pilthdown with his four and a half tons of bison meat was trying to fill a non-existing desire. And the producer to-day, not least of all the paper manufacturer, is just as foolishly and futilely striving to sell more of his product than the consuming public wants or is able to consume.

Let me repeat that for emphasis, since it is apparently so simple that its import may be missed:

Before a sale can be made, there must be a buyer.

But at once the chorus raises its voice. "We must keep our plants running to keep our organization together. Cut prices attract customers. Therefore, we must lower our prices to attract them, and must protect our present customers by meeting our competitors' quotations."

Believe it or not, low prices cannot indefinitely create a demand for a product. They may stimulate buying beyond normal requirements for future use, but that means that business is trading on the future and drawing on tomorrow's profit to meet to-day's losses.

Here we seem to be in a hopeless maze. The Clayton Act prevents intelligent co-operation aimed at keeping prices somewhere in relation to cost plus profit. The mad, unintelligent scramble for what orders are to be had denies any chance of success to normal selling efforts. How then can the paper manufacturer, compelled to dispose of his product, sell his goods in a competitive market and still earn a decent margin of profit?

Let's go back to our basic fact—before we can make a sale, there must be a buyer.

What makes a buyer? Briefly, there must be a human want to supply. But a man's wants have their limitations. The manufacturer of newsprint knows that only so many papers will be printed, requiring so much of his product. When that amount of newsprint has been sold, a cut in price will not induce new publications to spring up, new advertisers to rush to the publishers with copy, and new readers to rise from nothing to buy the new paper printed on stock sold at less than cost by its producer.

Three Plans for Profit

Three courses of action are open to the paper manufacturer who would make a profit:

1—By a study of his sales field and markets, he can determine the reasonable expectancy of business for his company, and adjust his capital investment and plant to what business he can do.

2—He can sell his product as a specialty, creating desire for it which will make possible a higher price than the going rate of competitor's wares.

3—He can find new uses for his product, which may be in the field of paper specialties or staples, the latter, of course, only if the market is not already adequately served.

If he can do none of these, his best course of action is to liquidate and go fishing, for the paper industry is suffering from an injudicious investment of funds in equipment adequate to take care of the needs of the country for years to come, and which cannot possibly return a profit to any manufacturer who does not intelligently plan and work for profit.

1—Plant and Capital Adjustment

The first would be a bitter dose for the average executive, who seems to feel that "bigger" is always synonymous with "better," perhaps a hangover from the circus influence of his youth.

Yet for the manufacturer of a staple, it is logical to assume that unless he does eliminate from his books those accounts which he cannot serve profitably, and unless he sticks to his logical selling area, he can only hope to stare the sheriff in the face some day, unless he has a personal fortune to pour into a business that does not deserve this support.

The study of logical sales fields is perhaps the most neglected factor in selling all types of paper. If the average manufacturer in the industry would double his efforts to "blanket" his logical sales field, there is every reason to believe that profits should in turn be doubled.

2—Selling a Product as a Specialty

The second means of increasing profit, selling a product as a specialty, may be misunderstood by some. This does not mean that the product must be saleable only for some special purpose. It means that even a staple, such as newsprint or kraft, may be given a personality which puts it apart from the rest of its field.

Take, for instance, the case of a well-known paper company in the early days of the kraft industry, (which company, by the way, has always had intellient, productive sales direction and planning).

Their product was unknown. The mental picture everyone had of wrapping paper in those days was a coarse, heavy sheet that resembled shredded wheat biscuit.

Selling kraft as a staple, as just another wrapping paper, it would have taken years to introduce a product that deserved better treatment. Management, awake to the job ahead of it, decided to sell kraft as a specialty, and the famous "point per pound" test proved to paper users that weight did not mean strength.

Take even as prosaic a product as newsprint. Apparently there is not much of a chance to make a specialty of it. Yet consider for a moment that today the public is willing to pay extra for distinction, in newspaper as well as in perfume.

I would like to see some manufacturer do some experimental work and turn out a newsprint especially designed to read easily, yet conform with the mechanical requirements of newspaper printing.

Such a paper would have a cleaner, brighter look, would take ink in such a way that the type would print with sharp edges and would stand the strain of ordinary reading without ripping as soon as touched.

Properly merchandised, a paper of this type, a newsprint specialty, could be sold at a premium over

the run-of-the-mine variety and yield a greater percentage of profit to its maker.

This would mean that merchandising intelligence would have to be used to find reasons for its adaption. No newspaper would of its own volition increase the price paid for paper. But advertisers could be sold on the advantages of using finer screens; class readers could be attracted (and what newspaper to-day is not after class circulation?), and half a hundred selling reasons could be devised by any clever salesman.

If the prosaic sheet of newsprint can be merchandised as a specialty, how much easier it would be to market the better grades of paper in this manner, provided a little intelligence were used in the process!

Consider how your own product might be changed to a specialty. It may be the means of increasing your net profits many-fold.

3—Finding New Uses for Paper

The third possible method of increasing sales at a profit is really a phase of the second. When a kraft manufacturer, for instance, crepes his product and sells it for barrel liners, he is, essentially, selling it as a specialty.

In this connection, it has always seemed strange to me that some manufacturer of kraft did not go after building paper business. That is, without finding it necessary to put a layer of asphalt on one side, or to crepe it for "insulation value." As a matter of fact, the average building paper sold to-day is a very poor product. It is soft, tears easily, is particularly susceptible to moisture, and is just as costly as is kraft.

The theory is that the soft, fluffy paper is theoretically a better insulator, but the insulation value is usually about that of a coat of paint on the wood. The real value of the paper is that it makes walls wind tight, which job should be done even better by a kraft, with less waste and spoilage.

I am not citing this because I have anything against the manufacturer of ordinary building papers, but to illustrate that thinking of your product in connection with any use of paper, or considering it for uses to which paper has not been put, may show new sales possibilities and in turn, increased profits.

All of which means that having a plant and running it "by guess and by God" is not enough in to-day's fight for profit. To-day we must apply the highest type of thinking to our every act. We cannot say "We have always done things this way."

As a matter of fact, that a certain function of paper merchandising has been carried on in a certain way; that a product has been sold in a certain field, is almost prima facie exidence that it needs examination and correction.

Think, and sell more paper—at a profit.

Importance of Bisulphite Ion Concentration in the Sulphite Cooking Process

By PROF. DR. ERIK HAGGLUND
Royal Institute of Technology, Stockholm, Sweden

The chemical reactions which take place in the cooking of sulphite pulp are interestingly as well as authoritatively described in the accompanying article by Professor Hägglund, one of the foremost authorities on sulphite chemistry in Europe, who provided an English version of his paper for exclusive publication in THE PAPER INDUSTRY. The author is noted particularly for his work dealing with the influence of the sugars produced in sulphite cooking liquors and the subsequent utilization of these liquors. The research recorded in the present paper marks an extension of his studies and forms a valuable contribution to our knowledge of conditions affecting the quality and yield of pulp in the progress of a sulphite cook.

As was long ago suggested by the writer, the actual reactions involved in sulphite cooking are those of sulphonation and hydrolysis. The sulphonation begins at an earlier stage than does the hydrolysis, and it occurs already in the solid stage; i.e., in the wood itself, whereby a solid lignosulphonic acid is formed. With the cooking acids commonly used in the mills, the lignosulphonic acid and a part of the hemicellulose are brought into solution just as soon as the temperature exceeds 100 deg. Cent.; the speed of the reaction depending chiefly upon the acidity of the cooking acid.

As shown originally by Klason, the sulphurous acid is bound part strongly and part loosely and in the latter case to a so-called active carbonyl group—an aldehyde or ketone group. This reaction is, according to our investigations, one of great value for the normal progress of the cooking process, since the carbonyl groups of the lignin are thus protected. The color, both of the cooking liquor and the pulp, is intimately related to this phenomenon. In the free state and under unfavorable conditions of acidity and temperature, the free carbonyls cause discoloration, and finally resinification of the lignosulphonic acid will take place. If this happens in the solid phase a black cook will result.

If this reaction has not gone too far, it is possible by the use of sulphurous acid to restore the color of liquor and pulp. Pulp that was originally white, after having been thoroughly washed, becomes more or less yellow owing to the small quantities of lignin it contains; even this discoloration can be removed and the earlier whiteness of the pulp restored by treating it with bisulphite liquor.

Hydrosulphite has an action similar to bisulphite in restoring the original color of the pulp; a pulp that has been treated with hydrosulphite taking on a more permanent whiteness. Our interpretation of this is that the hydrosulphite compound of lignosulphonic acid is not split off so readily.

The behavior of sulphite pulp on illumination with ultra-violet rays from a quartz lamp is interesting. As is well-known, sulphite pulp especially when obtained direct from the drying machine glows with an intense violet fluorescence on exposure to ultra-violet rays, a phenomenon, as we have been able to show, caused by the solid lignosulphonic acid contained in the pulp. The fluorescence is sensitive to alkalies and acids, and we found that it could be regenerated by the addition of acid to a pulp that had been previously treated with an alkali and afterwards washed. We found that this depended upon a rearrangement in the lignin molecule, perhaps in the nature of a keto-enol rearrangement. With pulps that have almost lost their power to give a violet fluorescence under ultra-violet rays through the action of alkali, followed by washing and acidifying, this property can be restored in undiminished strength by treatment with a bisulphite solution. It seems most likely that a displacement of equilibrium between the keto form and the enol form takes place in favor of the keto form under the influence of the bisulphite liquor, and that it is the keto form which causes the bright violet glow or fluorescence.

I shall now touch on a question of more direct practical interest, namely the bearing of the composition of the cooking acid on the quality and yield of pulp, and on the sugar in the liquor.

As to yield of pulp, it was established, in agreement with what had been previously found that strong solutions of sodium bisulphite gave a very high yield of pulp, it being possible to produce a yield as high as 65 per cent by using an 18 per cent sodium bisulphite solution. The lignin content of such a pulp is very high, about 15 per cent, and is composed wholly of solid lignosulphonic acid. As a consequence, the ash content is also high, about 1.6 per cent. It is questionable if cooking by means of such a method can be conducted economically so as to be of practical value, for the pulp does not quite compare with sulphite pulps of commerce, and there is the problem of regenerating the chemicals in the spent liquor, which consist of large amounts of alkali and sulphur.

Of more pertinent interest was the question whether the yield of pulp could be influenced to any marked extent by changing the composition of the ordinary calcium bisulphite cooking liquor. To throw some light upon this, the figures in the accompanying tables may be consulted.

Table I

Maximum temp. 135 deg. Cent. The same temperature curve in all cooks.

Composition of cooking acid		Defibering point; % of the wood
CaO; gm. per 100 cc.	SO_2; gm. per 100 cc.	
0.65	4.25	49.3
0.80	4.26	52.4
1.00	4.27	52.6
1.15	4.26	55.3

The question may be asked whether the defibering point will be altered by exchanging another cation in equivalent quantity for calcium. The answer appears in the results shown in Table II. The percentage of lime in the calcium bisulphite cooking acid was 0.92 gm. CaO in 100 cc.; total SO_2 in all tests was 4.28 gm. in 100 cc. The same temperature curve. Max. temp. 135 deg. Cent.

Table II

Cation	Defibering point; % of the wood
Ca	51.9
Mg	51.8
NH_4	51.4

The yield is obviously the same. What it really depends upon is apparently the percentage of bisulphite ions in the cooking liquor. This will be shown by means of the tests given in Table III with calcium and magnesium liquor having a high percentage of SO_2.

Table III

Total SO_2 in all the experiments: 8 gm. in 100 cc. Max. temp. 120 deg. Cent.

Percentage of base; gm. per 100 cc.	Defibering point; % of oven-dry wood	Appearance of the pulp
CaO		
1.5	60.8	Slightly yellow; after further cooking about one hour: white
1.3	60.5	The same
1.1	60.9	The same
0.9	59.6	At the defibering point, brown; after cooking a longer time gradually lighter
MgO		
1.21	61.2	Slightly yellow. After 58% yield: white
0.73	61.8	Brown; after 54% yield: white

The results shown in the previously mentioned tables exhibit that it is possible to increase the yield of defibered pulp from 50 per cent to 60 per cent when the strength of the cooking acid as ordinarily used in practice is doubled.

It is evident from this that sulphonation in the solid phase is accelerated at an early stage of the cooking process, with only small quantities of hemicellulose being hydrolyzed and changed to sugar.

A problem of importance in this connection is to determine delignification with different compositions of cooking acid. This is illustrated in the accompanying curve (Fig. 1) applying to cooks made with the cooking acids of Table I.

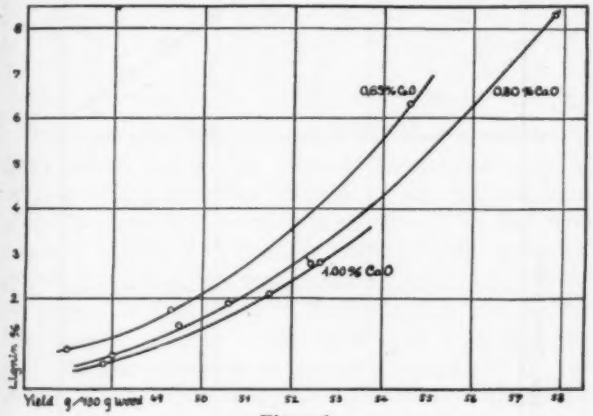


Figure 1

It is evident that, with the percentage of SO_2 being constant, a higher percentage of lime will speed up the cooking. The same is true also where the cooking is conducted with stronger acids, as is apparent in both curves, Fig. 2 and Fig. 3. It is here a question of the same cooks which are recorded in Table III, where the total SO_2 was 8 per cent.

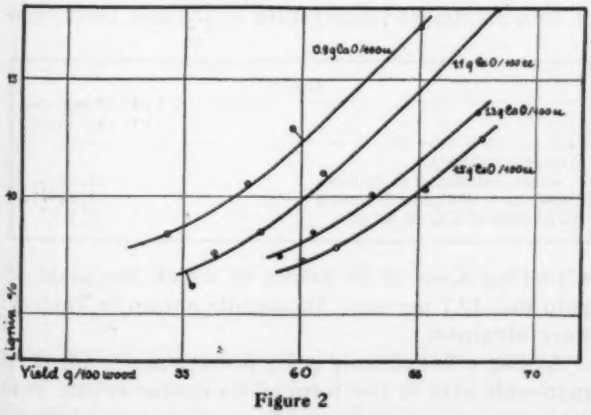


Figure 2

Between pulps cooked under different conditions, there are often, as is well-known, certain important differences in the physical properties. The strength of a pulp is the quality most frequently considered, but of that I shall say nothing in this connection; remarking merely that pulps made with strong cooking acids always show a great strength. The behavior of the pulp during beating is of equal interest. Different pulps show an apparent difference under beating. Water is taken up to effect a **hydration** which apparently consists at least primarily of

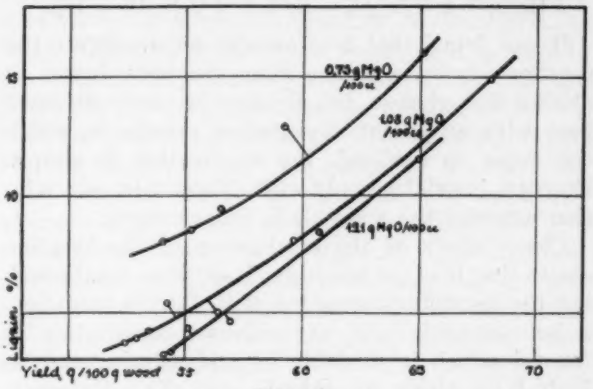


Figure 3

an intermicellary adsorption. It is very probable that this adsorption is catalyzed by the solid lignosulphonic acid localized in the micells. We have found that the solid lignosulphonic acid is prone to absorb water and become gelatinous, swelling to a higher extent the further the sulphonation has been carried.

Different pulps contain lignosulphonic acids of different degrees of sulphonation, depending on cooking conditions. By cooking with acids of a low bisulphite ion concentration but of high acidity, the degree of sulphonation is lower than in pulps obtained by cooking with acids containing a high percentage of bisulphites.

This can be shown by the proportion of sulphur and lignin in different pulps. The ratio between the sulphur and the Tingle chlorine number (indicating amount of lignin) in cooking with acid of ordinary strength is about 1.3 (at a wood residue of 55 to 65 per cent), whereas the ratio is about 1.8 in cooks with acid containing a high proportion of bisulphite. This is the likely explanation, because defibration probably takes place at a higher yield than that which is ordinarily obtained when weaker cooking acids are used.

It is of both theoretical and practical interest to ascertain the influence which the proportion of sulphite acid exerts upon the yield of sugars in the cooking process. Several years ago, I published a communication concerning the important part that sugar formation plays in the decomposition of the bisulphite. In this I demonstrated that aldoses, like glucose, mannose and xylose, accelerated the decomposition of the bisulphite into sulphur and sulphuric acid in about the same degree. In explanation, I pointed out that the catalytic action of the sugar made for a readier transformation of intermediate

products of the conversion, particularly the thiosulphate ions which accelerate the decomposition, and this has proved to be the case. The sugar itself is broken down in the reaction and in a rather unexpected manner, being oxidized to the corresponding aldonic acid, according to the following reaction:

$$2\,HSO_3^{\cdot} + 2\,C_6H_{12}O_6 = S_2O_3^{\cdot\cdot} + 2\,C_6H_{12}O_7 + H_2O$$

It was found that fructose did not accelerate the reaction anywhere approaching the same degree as aldoses like glucose did. Because we are concerned here with an oxidation-reduction process in which the sugar is oxidized, the explanation is simple. Fructose is oxidized only with difficulty in acid solution whereby the molecule is broken down.

Closer study of the mechanism of the reaction shows that it is not the sugar itself that is attacked, but the bisulphite compound of it. During oxidation, a ketosulphonic acid of unknown constitution is formed which is unstable in acid solution and on hydrolysis yields an aldonic acid. The hydrogen, corresponding to the oxygen which is consumed in the oxidation process, will be taken up by the bisulphite, thus producing thiosulphate and polythionic acids which finally give sulphur and sulphuric acid.

Similar conditions must prevail in ordinary sulphite cooking, but in a more pronounced form, depending on the concentration of bisulphite; i.e., percentage of lime. To prove this, a collocation of earlier cookings under variable conditions was made. The results are shown in Table IV and in the curve, Fig. 4.

Table IV

Composition of the cooking acid, gm. per 100 cc.		Cooking time, hours. Max. temp. 135°	Yield of pulp gm. per 100 gm. wood	Sugar, calculated as glucose, gm. per 100 gm. wood
CaO	SO_2			
1.40	4.74	19	46.1	9.61
1.40	4.20	18	51.8	10.90
1.32	4.58	20	49.7	11.95
1.29	3.26	19	55.8	12.12
1.30	4.67	19	49.8	12.63
1.20	5.98	18	51.2	12.80
1.06	4.01	19	48.3	13.50
1.01	3.97	18	51.2	14.00
0.92	4.30	17	51.3	14.80
0.87	3.90	19	47.6	14.88
0.72	3.74	17	52.5	15.90
0.62	5.63	15	49.8	16.15
0.60	4.20	18	49.7	16.71
0.62	5.63	17	46.7	16.95
0.00	7.50	36 (at 95°)	54.7	21.05

The speed of formation of sugar is shown in the curves of Fig. 5 with reference to cooks recorded in Table I.

What was theoretically to be expected took place. By a relatively slight variation of the lime content, or what is the same, of bisulphite ions, the percentage of sugar with practically identical yields of pulp varied within wide limits.

It was the general understanding formerly that the breaking down of the sugar in the sulphite cooking process depended upon the acidity of the cooking liquor, in the same way as loss of sugar occurred when it was heated at high temperatures with dilute mineral acids. This is an error, oxidation of the kind just described being the essential factor in the disappearance of the sugar. Such being the case it

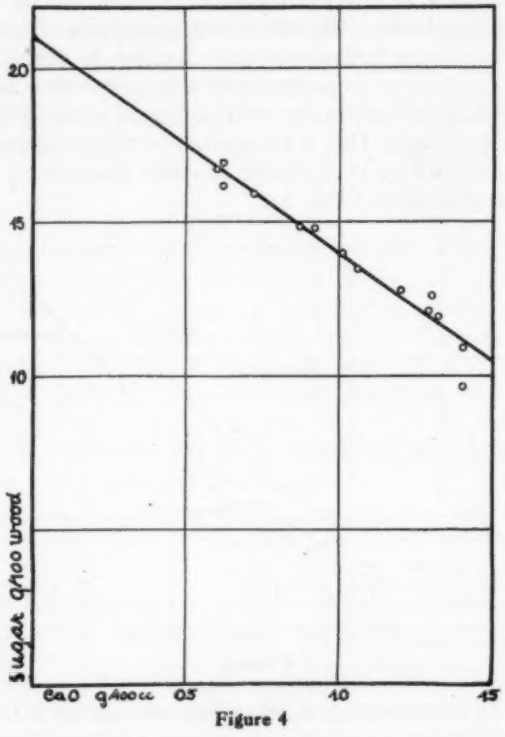


Figure 4

would be expected that aldonic acids could be identified in the sulphite waste liquor in quantity corresponding to the loss of sugar noted in the cooking process, and such is actually the case.

Thus, in cooking with a sulphite liquor of the composition 1.32 gm. CaO and 4.6 gm. SO_2 in 100 cc. at a maximum temperature of 135 deg. Cent., and

Table V

	Yield in gm. per 100 gm. wood
Directly reducing sugar, calculated as glucose	11.97
Sugar after complete inversion	12.33
Lime salts of aldonic acids	9.1

a cooking time of 20 hours, in which the yield of pulp was 49.7 per cent, the results shown in Table V were obtained.

Among other aldonic acids it was easy to identify mannonic acid in the form of its characteristic brucine salt, as well as in the form of its phenylhydrazine compound; xylonic acid could also be definitely identified.

The breaking down of the sugar through oxidation leads, as has been pointed out, to the decomposition of the bisulphite to thiosulphate, polythionic

acids, etc., into sulphate. We can consequently look for an accelerated formation of sulphuric acid when to the cooking acid is added waste sulphite liquor, or sugar. That this is the case can be seen from the figures in Table VI.

Table VI

Formation of sulphuric acid during cooking, in gm. per 100 gm. wood.

Cooking time; hours	Pure cooking acid of the composition, 3.98 gm. SO_2 and 1.0 gm. CaO in 100 cc.	⅔ pure cooking acid and ⅓ sulphite waste lye. The mixture contained 4.0 gm. SO_2 and 1 gm. CaO as sulphite in 100 cc.
14	0.36	—
16.5	0.42	1.04
18.75	0.94	1.72
20.5	2.08	3.85
21.25	3.08	5.00

Theoretically, it is to be expected that as sulphuric and aldonic acids are formed during the cook, a corresponding quantity of sulphur and thiosulphate could be identified in the waste liquor. We did not, however, succeed in that. A much smaller quantity of reduction products was obtained than what should be expected. The thought therefore recurred to me that possibly some other substance than the bisulphite might act as an acceptor; i.e. could be reduced. On heating bisulphite solutions with sugar alone, the corresponding sugar alcohols—mannitol, sorbitol, etc.—are not formed. In this instance, therefore, there was nothing but the lignosulphonic acid to consider. It should be expected that the

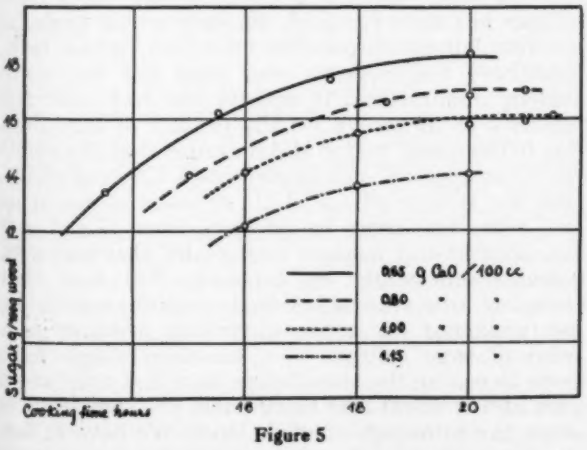


Figure 5

greater the concentration of bisulphite ions, the more the lignosulphonic acid would be reduced. Klason has determined, as is well-known, that two kinds of lignosulphonic acids exist in the waste sulphite liquor—alpha and beta. The former has the characteristic of being precipitated with naphthylamine, a reaction that depends to some extent on the presence of an aldehydic residue. Beta lignosulphonic acid, which is characterized, according to Klason, by the presence of an alcoholic residue, instead of the aldehydic group of alpha acid, is not precipitated. Until now it was supposed that alpha and beta acids existed in the sulphite liquor in constant proportions, namely about two-thirds of the former and one-third of the latter. But such a constant relation does not exist when the property of being precipitated with naphthylamine is taken as a basis, and the property depends on the method of cooking and above all, the composition of the cooking acid.

If the cooking is conducted with pure SO_2 liquor at a low temperature, 90 per cent of all the sulphonic acids present can be precipitated with naphthylamine. It has been shown that the lower the lime content, the higher is the yield of alpha lignosulphonic acid. This leads me to suppose that the unprecipitable lignosulphonic acid is formed during the period of cooking by a reduction process that probably proceeds in stages.

In this way it may be explained why the theoretical quantity of thiosulphate and sulphur, based on the amount of sulphuric acid produced, cannot be found in the spent liquor.

It seems to me as if the following test should speak for this assumption.

A sodium bisulphite pulp containing 13.5 per cent lignin was hydrolized with a sodium acetate solution of an acidity corresponding to pH 4.3 during ten hours at 130 deg. Cent. Thereby about 50 per cent of the lignin went into solution as sulphonated sulphonic acid. Nearly all of the lignosulphonic acid could be precipitated with naphthylamine.

Another sample of sodium bisulphite pulp with the same lignin content was hydrolized with sodium bisulphite containing free SO_2, corresponding to 1 per cent Na_2O and 5 per cent SO_2 during 10 hours at 135 deg. Cent. In a parallel test, the cooking acid contained 2 per cent glucose. The amount of lignin precipitated with naphthylamine was 84.5 per cent and 61.5 per cent respectively.

The presence of sugar, as was the case in the latter test, apparently increased the reduction.

I wish to state that what I have stated here concerning the different sulphonic acids is in the nature of a hypothesis, which, however, seems to me to be well founded.

Conclusions

In summarizing the practical importance of the work described in the foregoing paragraphs, it has been found that a high base content of the cooking acid increases both the yield and the quality of the pulp. Any increase of the base content brings with it a strong breaking down of the sugar in the cooking liquor through oxidation. One is therefore justified in asserting that the interests of the sulphite pulp maker and the sulphite alcohol maker are opposed

(Continued on page 518)

Current Thought by William Sibley

Behind and Beyond the Hoover Plan

THE panic of 1893 left the United States in an acute stage of after-panic depression. This period of depression not only continued, but constantly took deeper root for more than two years. By January, 1895, the economic structure of this country was honeycombed with falling prices, unemployment, lack of demand for goods, and general despondency. There was a period of thirty or sixty days during that winter when it was generally believed that the financial solvency of the United States Government could no longer be maintained. Gold was exported in unprecedented quantities. Indeed, the "flight from the dollar" rose to such an alarming state that finally the New York subtreasury notified Washington that it could continue redemption of United States currency in gold only one day more.

At that critical period, President Cleveland, with the assured support of a powerful international banking syndicate, came forward with a plan to arrest gold exports. This plan, admittedly, did not touch the root of the economic problems. The best that might be said of it was that it afforded an effective, though temporary stopgag. But even so, the institution of the Cleveland proposal accomplished three purposes; it rehabilitated the Government's shaken credit; it provided a breathing space in which to apply more permanently constructive corrective measures; and what certainly was not the least of its accomplishments, its psychological effect put an immediate end to an atmosphere of hopeless panic.

In the half-year in which the protective measures of 1895 continued to operate, the financial position of the entire country was radically altered. That alteration brought proof positive that the black cloud of depression could be dispelled, since it was shown that the seemingly hopeless condition of production and distribution had largely been a matter of absolute loss of confidence. And the restored confidence, which in turn instituted an immediate betterment of economic conditions, started the United States on a period of business prosperity which continued for a decade or more.

It seems to me, the conditions surrounding the Cleveland proposal and the recent Hoover plan regarding the inter-governmental debts are so closely comparable as to demand mention. Now, the strain of reactionary trade and falling prices, coupled with the imposition of huge gold exports, is in the lap of Germany. And this strain has been so great as to bring about a virtual collapse of economic conditions —to a point where the political structure of that country is gravely menaced. During the past few weeks and months, as Germany has rationed out her dwindling store of precious gold, the premonition of a major calamity in the way of a dual political and economic collapse has confronted the world.

And since Germany is to-day the buffer nation between the world and radicalism, between construction as we know it and restruction as we abhor it between civilization as advocated across her two eastern frontiers, the collapse of Germany at this time offers a grave threat to every European government.

The very remarkable unanimity of enthusiastic approval with which Mr. Hoover's plan for a debt holiday has been received, not only on all financial markets but by responsible financiers, public men, publishers, and business men alike, has two quite evident implications. It reflects the fact that the majority of us recognized the gravity of the situation in Germany; and it also indicates that the whole "debt controversy" has passed into a different phase. Had Mr. Hoover advanced his proposal as recent as two years ago there would have been a loud and strutting protest against even a hint that war debt commitments might be deferred. But now that Germany, who at least indirectly pays the war debts, has weakened under the increasing pressure to a point of total collapse, the American people have come to realize the astonishing fact that they are a part of the world and being such, are compelled to share the sufferings of other lands. We have at last come to see that when our neighbor's house is on fire, with the high wind blowing in our direction, there is little sanity in sitting idly on the front step and boasting that we are independent.

Additionally, there is international recognition of the fact that the whole question of war debts must be approached in a new and more sober spirit if the buffer nation is not to be sacrificed and thereby impose upon the world a much more serious menace as well as the complete loss of such debts as remain

unpaid. Therefore, Mr. Hoover's proposal which affords the needed period in which to gain a new and better perspective of the world's financial entanglements has been welcomed everywhere—and made that proposal probably the farthest reaching diplomatic action since Versailles.

Hits Business Depression

Mr. Hoover's masterful stroke of economic diplomacy strikes directly at the existing deadlock in trade and commerce. It holds as high a promise of breaking the strangle hold of depression as did the Cleveland proposal of 1895. The distortion of credit structures incident to huge periodical transfers from state to state will be relieved. Nations thus relieved may be expected to relax their tariff barriers, which have been erected to enable a balance of trade for the payment of these obligations. The operation of the plan should open the gates for both the importation and exportation of foreign goods—and such interchange of commerce in the vertebrae on which the whole business skeleton hangs.

This country is fully prepared for the Hoover step, both mentally and physically. There is universal recognition, here, that "old world" problems may very materially affect our "new world" conditions. More and more has it become a realizable fact that far more is to be gained by recovering foreign markets for the products of our farms and factories, than must be foregone in the temporary remission of foreign government obligations; even though such obligations might be met without quite causing a revolution or civil war in Germany—which of course would practically wipe out all possibility of debt collection, if nothing more.

Business has been waiting for some big event to provide the turning point for recovery. The Hoover plan of a few weeks ago offers that fulcrum, exactly the same as did the Cleveland proposal of 1895. Business, in equal measure with governments, now have an opportunity to pull the throttle and get going. That already our hands are on the throttle and the starting pull is being made is evidenced by the reaction of Wall Street's big board. That this is only a start, and Business, beginning now, will start upward, is abundantly assured on every side. And the business man who is alive to his own interests, will make certain that he and his will take, over his competitors, the head start which the present affords. Tenaciously to cling to one's lack of confidence in the business future, or adherence to depression ideas at this time will mean a late start in the business race that is now beginning—and the occupancy of a precarious position in the early tomorrow.

In no way should this advocacy of immediate business expansion be construed to mean "increased production." Surely we of the paper industry have learned by now the burden of overproduction. We need no more production facilities—but we do need, better mechanical methods, more aggressive salesmanship, deeper research into new products and markets, enlarged advertising appropriations, and all the other natural concomitants of renewed confidence. There are in our industry a thousand places where are needed locomotive cranes, boiler plant equipment beaters, electric hoists, conveyors, motors, generators, etc., etc. Not a single piece of such equipment is needed if it is to be used for added production. But as replacement material to old, obsolete and costly equipment, there is a need in every plant.

In equal measure, there is need for more and better salesmen, larger and more effective advertising appropriations, the institution of individual research laboratories, the discovery of new markets, the development of improved products. A couple of years ago I devoted my space to a discussion of the need for and value of a co-operative industrial advertising campaign, for the purpose of increasing the demand and consumption of paper. Right now would be an excellent time for the various association heads to bring that subject to the front—and have something done about it. The paper industry of itself stands in real need for its own Hoover plan. There would be real value attached to an industrial "moratorium,"—a long holiday from all plant expansion, —and the confidence to devote the savings effected thereby to the several things named above.

Let's Get Down to Work

In talking thus to one representative of our industry, the counter argument was advanced that, since we are all opposed to debt cancellation, we should rest on our oars for one year—to determine the effects of the Hoover plan and the likelihood of further "extensions," "postponements," or "cancellations." Such reasoning seems to me too shallow for extended comment. It is sure that the majority of the American people are militantly opposed to debt cancellation. Mr. Hoover is constantly rendering assurance in this regard, he having said repeatedly that his plan was merely for a year's postponement of payments and not to be thought of as cancellation in any respect. Thoughtful people will know that such statements are largely lip-service, since there is no denying the fact that if, at the end of one year, business conditions have picked up to a point where solid prosperity is within easy reach, there will be precious few of us who will be willing to return to the conditions of 1930.

There can be no question but that the Hoover plan for the suspension of war debt payments is a wonderful wedge for the cancellationists. And while I have always been violently opposed to debt cancellations (even those we have already made), I am not at all certain that enduring business prosperity is not far better than the collection of foreign government obligations at a time the money does us nothing but harm. The question of war debts in not moral, it is economic. We have already cancelled half of the debts by a great reduction of the interest. By every moral code we were entitled to stand pat—but it would have done us no good. Directly or indirectly, we shall doubtless have to cancel an additional part of the debts because we cannot afford the luxury of not doing so. The debts are valid, but we have cancelled half of them and the remaining half is not fully collectable. This being the case there is nothing to be gained by worrying at this time over the status of the war debts in 1932. The thing for us to recognize is the analogy between the conditions of Cleveland and the conditions of Hoover—and that we are on the threshold of a period of prosperity more far-reaching than anything Mr. Cleveland ever started.

Mr. Hoover has revivified confidence and restored faith in the future of both commerce and politics. America is in a better position than any other country to capitalize on that renewed confidence. Now let's get down to work.

The Sulphite Process

(Continued from page 515)

as regards the most desirable method of cooking pulp, and it appears necessary in each specific instance to ascertain the best middle ground for determining the system of cooking which is most advantageous for the manufacture of pulp and alcohol as a whole.

It has been definitely ascertained that contrary to expectations, there is an increase of 5 to 10 per cent in the yield of defiberable pulp, calculated upon the oven-dry weight of the wood, when the strength of the cooking acid is increased to twice that ordinarily used. This is possible because the speed of sulphonation is comparatively greater than that of hydrolization.

There are practical difficulties in the way of carrying out a cooking process based on the foregoing research, chiefly because the digesters used commercially are not constructed to withstand the pressure prescribed here. It is a question of calculating whether it would be profitable to change over to digesters different from those which are now in use.

The Paper Industry Safety Contest

Cumulative Scores—January 1 to May 31

18 Mills Keep Perfect Record

PERFECT SCORES

Division I — Paper and Pulp Mills

	ENTRANT	MILL	LOCATION
GROUP A			
GROUP B	Champion Coated Paper Co.	No. 1	Hamilton, O.
GROUP C	Cornell Wood Products Co.	Cornell	Wisconsin
	Finch, Pruyn & Co., Inc.	Glens Falls	New York
	Consolidated Water P. & P. Co.	Appleton	Wisconsin
GROUP D	Gardner & Harvey Co.	No. 2	Middletown, Ohio
	Continental Paper & Bag Corp.	Ashland	New Hampshire
	Hollingsworth & Whitney Co.	Madison	Maine
	U. S. Gypsum Co.	No. Kansas City	Missouri
	Gardner & Harvey Co.	No. 3	Middletown, Ohio
	International Paper Co.	Riley	Maine
	U. S. Gypsum Co. *	Oakfield	New York
	U. S. Gypsum Co. *	Gypsum	Ohio

(*) Transferred from Group C to Group D

Division II — Remanufacturing

Container Corp. of America	Cleveland	Ohio
Consolidated Water P. & P. Co.	Stevens Point	Wisconsin
Container Corp. of America	Charleston	West Virginia
Container Corp. of America	Fairmont	West Virginia
Container Corp. of America	Natick	Massachusetts
Bemis Bros. Bag Co.	East Pepperell	Massachusetts

IMPERFECT SCORES — Division I

	Key	Rank	Points Credit	Points Debit
GROUP A	PA- 1	1	897.568	
	PA- 6	2	803.536	
	PA- 2	3	671.728	
	PA- 3	4	667.936	
	PA- 7	5	659.936	
	PA-10	6	594.512	
	PA-12	7	520.992	
	PA-11	8	464.368	
	PA- 8	9	25.200	
	PA- 5	10		33.600
	PA- 4	11		135.776
GROUP B	PB- 4	2	895.712	
	PB-27	3	825.360	
	PB-30	4	822.864	
	PB-24	5	808.256	
	PB- 2	6	797.488	
	PB-16	7	774.464	
	PB-18	8	739.728	
	PB- 8	9	729.264	
	PB-15	10	728.528	
	PB- 9	11	688.784	
	PB-19	12	654.240	
	PB-14	13	610.960	
	PB-32	14	610.880	
	PB- 3	15	594.656	
	PB-28	16	585.600	
	PB- 1	17	547.856	
	PB-25	18	530.848	
	PB-12	19	510.720	
	PB-20	20	485.952	
	PC-50	21	480.816	
	PB- 7	22	423.072	
	PB-17	23	321.808	
	PB-13	24	287.840	
	PB-10	25	286.640	
	PB-21	26	91.312	
	PB- 6	27		430.768
	PB-11	28		1.013.888
GROUP C	PC-23	4	877.232	
	PC-24	5	855.760	
	PC-25	6	844.816	
	PC-44	7	817.696	
	PC-33	8	697.104	
	PC-29	9	661.792	
	PC-17	10	657.456	
	PC-49	11	654.224	
	PC-43	12	643.744	
	PC-26	13	636.272	
	PC-21	14	627.552	
	PC-27	15	614.672	
	PC- 4	16	557.456	
	PC-48	17	370.288	
	PC-37	18	326.080	
	PC-31	19	287.200	
	PC-36	20	255.808	
	PC-20	21	175.296	
	PC-22	22	164.912	
	PC- 1	23	149.600	
	PC- 2	24	102.928	
	PC-12	25	43.896	
	PC-36	26	17.536	
	PC- 7	27		19.712
	PC-39	28		25.968
	PC-15	29		60.224
	PC-18	30		70.688
	PC-30	31		107.280
	PC-10	32		122.768
	PC-14	33		135.056
	PC-52	34		167.808
	PC-51	35		184.464
	PC-35	36		213.280
	PC-40	37		240.560
	PC-38	38		240.832
	PC-42	39		330.048
	PC- 5	40		359.696
	PC- 3	41		397.856
	PC- 6	42		405.600
	PC-32	43		673.616
	PC-11	44		720.528
	PC-47	45		848.048
	PC-13	46		1.346.528
	PC- 8	47		1.991.232
GROUP D	PD- 8	9	633.872	
	PD- 3	10	565.792	
	PD-10	11		3.600.032

Division II

RC- 2	7	921.220		
RA- 1	8	861.792		
RC- 7	9	812.464		
RC- 9	10	807.840		
RB- 1	11	661.392		
RC- 8	12	533.824		
RC- 5	13	472.864		
RC- 1	14	150.584		
RD- 1	15		631.488	
RD- 4	16		1.581.040	

Reports not received—
Div. I — April & May, PC-19; May, PC-53 and 54
Div. II — May, RC-3 and 11.
Withdrawn — Div. I, PA 9; PB 22, 26 and 29; PD 2 and 11.

W. J. Brennan Takes State Position

W. J. Brennan, chief chemist and safety director, St. Croix Paper Company, Woodland, Maine, has been appointed director of a newly created Division of Safety Engineering in the Maine Department of Labor and Industry, and will leave St. Croix for Augusta, Me., on July 15, to take over his new activities.

The Safety Engineering Division of the Maine Department of Labor and Industry has come into existence following several years of intensive work by the Hon. Charles Beals, commissioner of the department. Mr. Brennan has been active for a long time in the Pulp and Paper Division of the National Safety Council and is at present its chairman. He has been connected with the St. Croix Paper Company for nine years, going there in 1919 from the Health Department of the State of Maine in which he was one of the official chemists. His record of accomplishment as safety director of the St. Croix Paper Company is an excellent one. Accidents in the St. Croix mill were cut down from 170 in 1925 to four last year, only 50 days of lost time having been experienced in the 1,149,000 hours work, and the mill is now nationally known as the winner of the championship award for safety in mills of its class.

Canadian Technical Section

Summer Meeting of the Technical Section of the Canadian Pulp and Paper Association

ON June 18 and 19 the Canadian Technical Section held its regular summer meeting in Montreal. In view of the existing economic situation, some doubt had been entertained as to the advisability of holding a summer meeting this year. It was finally decided that it was just in such times as the present depression that the work of the technical men was of greatest importance and benefit to industry in general and that the pulp and paper industry was no exception. The meeting was therefore held. It was devoted entirely to business, however, and, contrary to the custom followed in previous years when the summer meeting had been considered chiefly as an outing with a little serious business thrown in, no entertainment was provided on the program.

THURSDAY MORNING SESSION

In opening the meeting, president Harold Crabtree of the parent Association expressed his regret and disappointment that every mill in the country had not found fit, or possible, to send at least one representative. Problems of great value to the industry were being studied in the laboratories of the Research Institute; the unfortunate death of E. P. Cameron, director of the Pulp and Paper Division of the Forest Products Laboratories of Canada, and the very serious illness of secretary Bryant of the Technical Section had naturally interfered with the work of the laboratories, but even these setbacks, serious though they were, could not stop the progress of the work. The laboratories were splendidly equipped and organized to carry on work which was of even greater importance to the industry under existing conditions than in normal times. The rapid development in the Southern and Pacific Coast States during the past few years had resulted in very keen competition with the Canadian industry. These regions possessed certain undoubted advantages which had permitted the establishment and rapid expansion of the pulp and paper industry; but Canada, on the other hand, possessed advantages which its competitors lacked. The work devolving on the Section, concluded Mr. Crabtree, consisted in developing to their utmost possibilities our natural advantages so that Canada might maintain the leadership which she acquired in paper manufacture in the course of the last decade. The successful solution of this problem was of vital importance to the economic life of the whole country, and the financial world had its eyes on the Technical Section to see how it would acquit itself of its task.

Chairman McLeod then welcomed back Mr. Bryant who had recently resumed his duties as secretary of the Section after many months' absence due to illness. Mr. Bryant replied that it felt good to be back in the harness and among his old friends once more. He had had a very close call, he said, so close, in fact, that he had cast a glimpse over the brink; but when he saw what was held in store for him, he had decided to come back and lead a better life.

J. O. Mason paid a feeling tribute to the late E. P. Cameron, whose untimely death had shocked all his friends. He presented a motion expressing the regrets of the Section and extending its sympathy to the bereaved family. J. N. Stephenson moved that a telegram of sympathy and good wishes be sent on behalf of the Section to George Bearce, manager of the Dalhousie mill of International Paper, who is at present convalescing from an operation for appendicitis.

Since the completion of the Research Institute, said Mr. McLeod, the work of the Section has consisted mainly in acting, through its various committees, as a link between the parent Association and the Institute. This work had been seriously handicapped by the death of Mr. Beck, secretary of the Association; as his successor Mr. Cadman had been so overloaded with other work that he had been unable to devote the necessary time to the activities of the Technical Section, which situation had been rendered even worse by Mr. Bryant's illness and Mr. Cameron's death. Another factor which had had a detrimental effect was the present economic and industrial depression, which had resulted in some of the larger companies restricting or eliminating association activities. A period such as the one that we are passing through at the present time was very ill-chosen for dropping association activities; now more than ever it was essential for the technical men to find means of lowering costs, and this could be done only through intensive fundamental and technical research. The last number of the Quarterly Review of the Forest Products Laboratories, which had been mailed to the members a few days before the meeting, showed that remarkable progress had been achieved in spite of the severe handicaps under which the staff had worked recently.

Report of Testing Committee

Profesor H. O. Keay, of Laurentide, then took the chair and presented the report of the Committee on Chemical and Physical Standards, which consisted of a memorandum of the meeting of the Committee held on May 18 last. In consequence of the definite instructions accompanying the vote of approval of last year's report at the Annual Meeting of the Technical Section, last winter, that a further study be made of the apparatus and methods adopted by the Paper Makers' Association of Great Britain and Ireland for the preparation of sheets for testing the initial strength of paper pulp, the Committee arranged its program of work for the present year as follows:

To investigate the objections raised in connection with the apparatus and methods adopted by the British Association for preparing sheets for testing the initial strength of pulps, and, based upon experimental work at the Forest Products Laboratories in Montreal, to develop methods to overcome these objections.

By correspondence to obtain the views of the Pulp Evaluation Committee of the Technical Section of the Paper Makers' Association respecting the proposed changes, all to the end of recommending an improved British Association sheet machine as the Canadian standard equipment.

Among the points to be investigated may be mentioned:

1. Pressure per square inch of sheet; the British method calls for 50 lb. per sq. in., while the Canadian method specified 200 lb. per sq. in.
2. Disintegration for both dried pulp and slush pulp.
3. Type of press; possible substitution of an oil hydraulic press similar to the Williams press.
4. Method of determination of basis weight by template cutting.
5. Verifying the necessity of a constant humidity room for conditioning sheets for strength tests and folding tests; to consider the substitution of a constant humidity cabinet together with the use of a dessicator containing the same solution as in the cabinet (as, for example, a saturated solution of ammonium nitrate) where only bursting and tearing strength tests are to be made.

In commenting on this program, Professor Keay referred to the difficulty encountered in carrying out a collaborative study of the Canadian and British methods as very few mills were equipped with both the British sheet machine and the Wilen-Date sheet machine adopted in Canada; apart from the Forest Products Laboratories, he knew of one mill in Ohio, the Howard Smith Paper Mills' research laboratory in Montreal, and the research laboratory and Jonquières mill laboratory of Price Brothers.

Outlining the results obtained to date at the Forest Products Laboratories in comparing the two methods, W. E. Adlington drew attention to the fact that it had been observed that the strength figures obtained with sheets made on the English machine and pressed at 50 lb. per sq. in. were

practically identical with those obtained on sheets made by the Canadian method on the Wilen-Date machine and pressed at 200 lb. He suggested that this was probably due to the use of a heavy 15-pound couch roll stipulated in the British method.

Results from British Method—Dr. Sankey, of the research staff of Price Brothers, next discussed his experience with the British method. Determination of basis weight of the test sheet by template cutting of the sheet after making the pop test, as specified in the British method, invariably gave low results, the difference reaching as much as half a pound. There were two factors of error affecting this determination: (1) liability of losing small pieces of the sheet which has been torn by the pop test; (2) the portion cut out by the template includes areas which have been stretched in testing, so that the area cut out does not exactly correspond to that which would have been cut out of the sheet before the test is carried out. As regards disintegration of the pulp, no distinction is made in the method between partly or totally dried pulp and slush pulp, which is quite natural in view of the fact that British mills use almost entirely imported pulp, little or no pulp being manufactured in Great Britain. The British procedure for this operaton causes somewhat less hydration than the Canadian disintegrator; but on the other hand it produces more hydration in the case of slush stock than with dried pulp.

The machine itself undoubtedly gives a better formation of the test sheets than any other machine on the market, and it possesses the added advantage of furnishing the means of easily measuring the rate of drainage of the pulp.

The chief objection which has been raised to the method as a whole is the pressing operation—the press used is clumsy and inconvenient and is probably not suitable for pressures much above the 50 pounds specified in the method. The design and construction of the press could doubtless be fairly easily modified to overcome these defects.

The drying procedure, under strained condition, giving a sheet having one side rough and the other with an M. G. finish, has been criticized. There is no doubt that this procedure gives a sheet of lower strength; but it has the two very appreciable advantages of preventing cockling and of producing more uniform sheets. The general impression, following several months' use of the machine, is very satisfactory.

In reply to a question of D. Ambridge, of Anglo-Canadian Pulp and Paper Mills, Professor Keay stated that the chief criterion to be used in judging of the superiority of one machine or method over the other would be the uniformity obtainable, to insure, as far as possible, that the results obtained are not due to imperfections and irregularities in the test sheets. Nothing prevented selecting the best points of both methods to work out the best possible procedure; for example, the pressing procedure specified in the English method could undoubtedly be improved, but this could be done without changing the machine proper or without modifying the British couching procedure, which was undoubtedly better than the present Canadian procedure.

Wilen-Date Machine—At this point, W. E. Adlington referred to the paper which he presented at the Annual Meeting of the Section last January. According to the results presented at that time, the agreement of the results obtained with the Wilen-Date machine was practically as good as with the British machine. But a point which had perhaps not been brought out sufficiently clear in the paper was that only the best sheets obtained on each machine were used in making the test, and that a much higher proportion of the sheets made on the Wilen-Date machine had to be discarded than of those made on the British machine; in other words, nearly all the British sheets were satisfactory for testing, while possibly one-third of the Wilen-Date sheets had to be discarded for one reason or another.

H. O. Mason, of Laurentide, inquired why the pressure of 50 pounds had been selected in the British method. Professor Keay replied that this pressure had been chosen because it was considered by those who developed the method that it best reproduced the results obtained on the paper machine in mill practice. He could not see on what grounds this conclusion was based; the mathematical treatment of the problem would be extremely complicated, and he even doubted whether it would be amenable to mathematical treatment. Some years ago E. P. Cameron had gone quite extensively into the effects of pressure on the results of the test and had found that below 200 pounds the strength increased quite rapidly with increase in pressure, but that at and above 200 pounds the increase in strength was very much slower; he had therefore adopted a pressure of 200 pounds because slight variations in pressure had a negligible effect on the strength figures obtained. It was quite remarkable, however, that the actual figures obtained by following the British method and pressing at 50 pounds were practically identical with those obtained by following the Canadian method and pressing at 200 pounds.

The chairman then raised the question as to what would probably be the attitude of the mills possessing other equipment if the Committee should decide that the British machine was the best and definitely recommended its official adoption. D. L. MacLeod, of Ontario Paper, Chairman of the Section, thought that the mills would probably follow the definite recommendation of the Committee; but the other members present were unwilling to put forth any opinion as to the probable action of the mills.

Vance P. Edwardes, of International Paper, stated that his company had adopted the British sheet machine in both its United States and Canadian mills and developed a standard technic for testing, and that this had been found very satisfactory for controlling the pulp cooked in the mills but had not yet been applied to the control of purchased pulp.

Use of Constant Humidity Cabinet—Turning next to item (5) of the report of the Committee, Professor Keay asked whether any one present had had any experience with the use of the constant-humidity cabinet. Dr. Sankey replied that at Price Brothers they had found the cabinet quite satisfactory for determining the pop strength and fair for the tearing resistance, but unsatisfactory for the tensile strength test. He added that it might be advisable to devise a standard technic which would permit different operators in different mills to obtain reproducible results; while each mill might possibly adopt a simplified procedure best suitable for its own individual needs, the results, while not being strictly comparable with those obtained in other mills, by a possibly somewhat different technic, being quite satisfactory for the control of operations in the individual mills.

At the request of the Chairman, L. C. Anderson, of the Ontario Paper Co., described his experience with various sheet-making machines. A somewhat modified Wilen machine had been found satisfactory with sulphite but not with groundwood because the latter stock was too slow. A Valley sheet machine had also been installed in his mill. As there was insufficient room to provide for the full head specified for this machine, a compromise had been made and piping had been connected which provided suction equivalent to a 48-inch head. This had been found to work satisfactorily on both sulphite and groundwood as far as time of formation of the sheet was concerned, and the accuracy in the reproducibility of results with sulphite pulps was about three to four per cent. Owing to the very great difference in the freeness of the stocks, the time element specified for the formation of sulphite and groundwood sheets could not be the same on the same machine.

Dr. H. Wyatt Johnston, of the Forest Products Laboratories, suggested that the fact that practically identical results were obtained by the English method with 50 pounds pressing and by the Canadian method with 200 pounds pressing might prove advantageous should the mills equipped with a Wilen-Date machine not wish to change over to the British machine.

G. P. Genberg, of Fraser Companies, considered that it does not make any difference which method is used, provided the conditions of the test are strictly adhered to; the equipment used in the two methods differs, but the conditions of the tests are essentially the same.

Dr. W. Boyd Campbell, of the Forest Products Laboratories, pointed out that two distinct factors were involved, which should not be confused, the equipment used for making the sheets, and the method followed in making them. These two factors are quite distinct, and it might well be that the Brit-

ish sheet machine would be found best for obtaining uniform sheets and the Canadian method most suitable for preparing them on the British machine.

Weldon Medal Awarded at Luncheon

At the informal luncheon which was held between the morning and afternoon sessions, the I. H. Weldon medal, awarded annually to the author of the best paper presented at the Annual Meeting of the Section, was presented by its donor, Arthur L. Dawe of the St. Maurice Valley Paper Co., to G. P. Genberg for his paper on the Effect of Calcium Lime in the Production of a Bleached Sulphite Pulp with a High Alpha-Cellulose Content. The Committee which judged the papers and made the award, also gave an honorable mention to Dr. John B. Phillips for his paper on the Resins of Jack Pine.

THURSDAY AFTERNOON SESSION

At the opening of the afternoon session, G. A. Balko, of Laurentide, took the chair to direct the discussion on groundwood. He first called upon Dr. H. W. Johnston, who gave a brief summary of the results of recent groundwood investigations carried out at the Forest Products Laboratories, which are reported in detail in the last number of the Quarterly Review. From an examination of the results obtained, it is evident that the operation of the experimental grinder has been brought under satisfactory control, so that it is now possible to measure accurately the moisture content of the wood used, the rate at which the wood is ground, the power consumption, the rate of production of pulp and the quality of the product as determined by freeness, coarseness modulus, resistance to flow, wet strength, burst ratio, tear ratio and breaking length. Methods were devised for recording the appearance of the dressing and measuring the mean depth of the pattern and the volume of stone removed per unit area, and also for recording the appearance of the pulp by photographing a dilute dispersion on a glass plate, permitting of counting the particles in an approximate manner and forming a sort of permanent "blue glass" record. By drawing smoothed curves through the points obtained by plotting the above mentioned properties against grinding time and tabulating the interpolated results thus obtained, it was possible to plot the different properties against one another for particular dressing formulate certain tentative mathematical relations between these properties.

Data Obtained by Forest Products Laboratories

The following interesting conclusions were drawn from the data obtained in a large number of experimental runs under various closely regulated conditions:

1. **Stone Life**—For a given freeness more stone is destroyed as the lead increases, that is, it is more difficult to sharpen with a long lead than with a short one.

2. **Freeness**—(a) No simple relation could be traced between lead and freeness.

(b) For any of the three leads studied (10 pitch straight cut, 10 pitch ¾ inch lead spiral, 10 pitch 1-½ inch spiral) any desired freeness could be produced, subject to the greater destruction of stone for longer leads.

(c) For a number of runs freeness increased as the 5.5th power of the depth of impression; in some runs a much greater depth did not cause any increase of freeness, possibly due to the surface sample not being representative.

(d) For most runs freeness varied inversely as the cube of the horsepower per ton per 24 hours, but for freenesses above 100 there is a tendency for freeness to pass through a maximum and fall off. There was an unexplained difference between different runs and different leads, which was possibly due to some condition in the wood or to some finer difference between patterns than the method of surface testing revealed; the trend, however, was unquestionable.

(e) No simple relation was found between freeness and production; the results were wider spread than in the case of horsepower per ton per 24 hours, but for many runs the freeness varied approximately as the cube of the production.

(f) A simple relation appears to exist between coarseness modulus and mean freeness, freeness varying as the 1.2th power of the coarseness modulus.

(g) Freeness is independent of strength to a remarkable extent. It is apparently possible to produce pulps with a burst of 17.5 points per pound and freenesses ranging from 60 to 150.

3. **Bursting Strength**—(a) Although no simple relation exists for a given production or a given horsepower per ton per 24 hours there is some evidence that strength increases with lead to a small extent.

(b) Burst appears to increase as the 1.5th power of horsepower per ton per 24 hours for any particular dressing.

(c) Burst appears to increase at first inversely as the 1.75th power of production, with a tendency to reach a maximum value for a given dressing.

(d) Burst appears to reach a maximum as time proceeds, for a given dressing.

(e) Burst appears to increase inversely as some power of the coarseness modulus, probably not far from the square root.

(f) The general trend of the burst-freeness curves indicates a possible relation in which burst varies inversely as the square root of freeness; however, for freenesses from 60 to 150, strengths of from 17.5 to 22 points per pound were obtained, so that is was possible to produce both slow, relatively weak pulps and very free and strong pulps.

4. **Depth of Pattern**—The method used enabled a reasonable control of dressing to be made; but the method should be made more sensitive and more representative, as it is in the method of application that the secular variations occur which obscure any relation which may exist between lead and quality of pulp.

5. **Production**—(a) After careful and exhaustive tests to ensure the accuray of the results obtained, it was found that the yield of pulp on a basis of oven dry wood ran about 84 to 86 per cent of accepted stock from the coarse screen, with 1-½ per cent tailings. The yield is low, but the measurements on which it is based are very precise and reliable.

(b) The production obtained was remarkable. Considering that, in a commercial pocket grinder using 24-inch wood and producing about 6 to 7 tons of pulp per day, the pocket area is about 1150 square inches, of which E. P. Cameron has estimated that about 75 per cent is on the average in effective use, say 900 square inches, the effective grinding pressure, based on 27 pounds per square inch of pocket area, is about 36 pounds per square inch, which, according to Thickens, should mean a large increase in production, far more than proportional to the actual pressure employed as compared with the laboratory grinder. No satisfactory explanation has yet been found for this result; and if experience confirms it, reconsideration of grinder design in relation to these results might become of interest.

6. **Power**—Due in part to the remarkable production, and also to other causes for which no satisfactory explanation has yet been found, the power consumption observed lay almost entirely below the minimum of 55 horsepower per ton per 24 hours which Thickens gives as the irreducible minimum for grinding, and above which commercial operation is invariably found to take place. Great pains were taken to verify the power readings and production determinations, and the most searching scrutiny failed to detect any flaw.

If further study of the problem should confirm the results obtained so far, the possibility of a saving of 20 to 25 per cent in power would warrant a careful study of grinder design in this connection.

D. L. MacLeod suggested that the low yield obtained might be due to high water-soluble content of the wood. As to the power consumption, while it was undoubtedly very low, still, it fell within the range observed in commercial groundwood production. He also noted that the figures given for tailings were exceptionally low. Dr. Johnston explained that this was largely due to the fact that the pulp was not subjected to fine screening, which would have increased the screenings by about 1 to 1.5 per cent which would have brought total screenings up to about 3 per cent. High water-soluble could hardly account for such low yield as was obtained, as this value would hardly run above 5 per cent in Canadian pulpwoods.

Dr. J. S. Bates, of Price Brothers, stated that the water-soluble content of Canadian pulpwoods seldom exceeds 1 to 2 per cent, and moreover, if the wood used at the Laboratories had contained an unusually high water-soluble this would

immediately have been noticed from the appearance of the white water. It should certainly be an easy matter, in future tests, to make water-soluble determinations on the sawdust produced in cutting the discs used for making moisture determinations. Replying to Dr. Bates' inquiry as to the quality of the groundwood produced, as shown by the strength and fineness figures, compared with those of commercial pulps, Dr. Johnston stated that the strength was somewhat lower, and the fineness also was probably lower than those of the pulp produced at the Price mills. These differences he was inclined to attribute to the different white water conditions, as fresh water exclusively was used in the experimental runs.

Mr. Balko suggested that the high production may have been due to the exclusive use of white water, which may also have affected the amount of water-soluble matter extracted, while according to Mr. Ambridge the high output was possibly due to exceptionally dense wood.

Discussion on Pulpwood

R. W. Sterns, of Abitibi, opened the discussion on pulpwood by giving an outline of the contents of the proposed pulpwood manual which, according to the present plans, will be along the following lines:

Pulpwood Species—The various species commonly used for pulpwood; how to know them by foliage; by bark, by structure and appearance of wood; how to distinguish between spruce and balsam, spruce and jack pine, spruce and Hemlock, etc. The properties of the pulpwood species: density, fibre lengths, cellulose contents, etc.

Forest Measurements—Cruising; relation of D. B. H. to total volume; proportion of total volume available for pulpwood use; proportion of slash, and possible methods of utilization; taper tables for Canadian pulpwood species; bark thicknesses.

Woods Measurements—Methods of scaling on skidways; log rules; solid contents of cord; allowance for defects in wood; defects and utilization; contents of booms of floating logs; sinkage in transit; deterioration in the woods.

Measurements at the Mill—Weighing; weightometers for pulpwood and for chips; methods of sampling for moisture; accuracy of moisture sampling; scaling; rack measurements; cordage tables; methods of determining density; determination of wood consumption from weighed production by stock accounting; yields of pulp; water-soluble losses; fiber losses in white water; wood losses—sawdust, slivers, chipper sawdust, disc and drum barker losses; metering of slush pulp; chip volumes.

Storage Piles—Survey methods for determining pile volumes; conversion factors pile volume to cubic feet solid wood, or cords; effects of presence or absence of bark, size of wood, length of blocks, species, time in storage; deterioration in storage and how to avoid it.

This program met with the approval of the members.

Mr. Sterns next referred to the importance of a thorough investigation of the problem of the deterioration of wood in storage piles and stated that, as a preliminary to studying the problem, a questionnaire had been sent to all the Canadian mills, and it was hoped that much valuable information would be obtained from the answers.

Ellwood Wilson, of Laurentide, stated that some years ago a study had been made of the organisms responsible for the decay of stored wood, and these organisms had been definitely identified. In looking for a disinfectant suitable for protecting the wood, the use of sulphite waste liquor had occurred to him. The fungicidal properties of this product had been determined at the Forest Products Laboratories in Ottawa; a 20 per cent solution was found to inhibit the growth of some of the organisms liable to cause damage, a 40 per cent solution prevented the growth of all organisms but one, while practically all were destroyed by a 60 per cent solution. One point, however, and an important one, seems to have been overlooked. The fungicidal properties of sulphite waste liquor are probably due to its residual sulphur dioxide, which, under the conditions under which it would be used as disinfectant for mill storage piles, would evaporate fairly rapidly, while the sugars present would remain affording an ideal culture medium for any organism which might subsequently be deposited on the wood. As it would be necessary to treat the piles at frequent intervals, the relatively large amounts of sugar which would thus accumulate on the wood might cause trouble in pulping. Mr. Wilson concluded his remarks by stressing the importance of thoroughly cleaning and disinfecting the piling grounds.

T. A. McElhaney, director of the Forest Products Laboratories at Ottawa, while not denying the importance of disinfecting the piling grounds, thought that this was probably not the only measure required. Very little reliable information on this subject is available, and much work will be required to put an end to the very big loss sustained each year by the mills owing to deterioration of stored wood.

Mr. Stearns mentioned that, at Iroquois Falls, it had been observed that rail wood deteriorated more rapidly in the pile than river wood. This, he thought, was possibly due to the prolonged washing to which the river wood was subjected in the course of the drive, resulting in the removal of most of the organisms. A similar result might possibly be obtained by a mild disinfecting treatment, either before storing or on the pile.

A. Koroleff, secretary of the Woodlands Section, brought the discussion to a close by outlining the investigation of deterioration in the woods being carried out under his direction. The question of deterioration in storage is very closely connected with it, and it would best be studied co-operatively by woodsmen, plant pathologists, botanists and chemists, the aid of the latter being required more particularly to determine the pulping properties of partially deteriorated woods. Careful inspection of the block piles and estimation of the degree of decay should be included in the scope of the investigation, as should the rate of deterioration of samples of wood exposed to various atmospheric and climatic conditions.

FRIDAY MORNING SESSION

Report of Sulphate and Soda Pulp Committee

The Friday morning session opened with the report of the Sulphate and Soda Pulp Committee. Dr. J. H. Ross, of the Forest Products Laboratories, described the progress made in the investigation of cooking with dilute (about one per cent) caustic soda of constant concentration. The apparatus used provides for circulation of the liquor through an external heat exchanger and also for injection of regulated amounts of stronger soda liquor to maintain the amount of free alkali constant. This procedure was adopted because if the chips had been brought into contact at the start with the whole dilute alkali required for complete cooking, the liquor to chip ratio would be excessive and the volume of liquor too large to be handled conveniently. Determination of the viscosity was the chief analytical method used for judging the quality of the pulps produced as it gives an indication of the amount of degradation of the cellulose. Though the investigation is still in its initial stages, some highly interesting and very encouraging results have already been obtained, which indicate the possibility of obtaining high yields of soda pulps suitable for rayon manufacture or equal in strength to sulphite pulps.

Dr. Emil Heuser, of Canadian International Paper, considered that viscosity, while it might be satisfactory for comparing different pulps of the same nature, was not suitable for comparing different kinds of pulps, because with a given type of pulp, this property could be varied over a wide range by suitable modification of manufacturing conditions, and it gives an indication merely of the degree of degradation of the cellulose.

Vance P. Edwardes, of International Paper, referred to some work done at Madison in 1915 by Sidney D. Wells, who injected water into the digester towards the end of the cook, which, he claimed, increased both the yield and strength of the pulp. Mr. Edwardes stated he had experimented along the same lines on a semi-commercial scale with a one-ton digester but ran into no end of trouble.

Dr. Harold Hibbert, professor of Industrial and Cellulose Chemistry at McGill University, raised a point of considerable economic interest by asking whether the investigation at present under way, if it produced the results which it seemed to promise, might not change the general trend of the Canadian pulp industry so that the sulphite process would gradually give way to the alkaline processes. He suggested that,

before proceeding with the work, complete analyses of both the unbleached and bleached pulps should be carried out, which would show, among other things, whether the high yields were due to an actual increase in the amount of cellulose isolated or merely to an increase in the pentosan content of the pulp.

According to Mr. Ambridge, the matter of high yields is of the utmost interest. As regards newsprint production, with which he is concerned, the manufacturing processes have been developed and perfected to a point where practically the only place where an important saving can be effected is by increasing the yield of sulphite. R. Collins of Wayagamack, concurred with this view, adding that all sorts of processes had been brought out to increase the yield, and that variations of liquor concentration over a wide range had been tried out; but the yield actually obtained in the mills still remained at 45 to 48 per cent.

Pulp Bleaching Committee Reports

Dr. F. H. Yorston, presenting the report of the Committee on Pulp Bleaching, described the work being done in this connection at the Forest Products Laboratories. The usual hydrogen electrode cannot be used for measuring the pH value of bleach liquors; but the glass electrode devised by the Rockefeller Institute, of New York, was found quite satisfactory for the purpose. The pH value of fresh liquor is about 11 or more; in the course of bleaching the pH gradually decreases, reaching a value of about eight when half the bleach has been used up; it then drops more slowly reaching the acid range towards the end of the bleaching. In the later stages, duplicate determinations do not generally agree very well on account of the liberation of carbon dioxide. As bleach liquors attack cellulose most rapidly at a pH value of about seven or eight, bleaching should be carried out either on the acid or on the alkaline side. Acid bleaching, however, is not practical. Alkaline bleaching of sulphite pulp produces a pulp with a viscosity approximately 50 per cent higher than by ordinary calcium hypochlorite bleaching; the process, though slower, gives a slight (about two per cent) but consistent saving in bleach. The bursting strength and tearing resistance are also improved as compared with ordinary bleaching. Similar results were obtained by using this process for the final-stage bleaching of soda or kraft pulp. The experiments carried out to date have led to the conclusion that bleaching with chlorine gas, followed by washing with an alkaline solution, is the best first-stage treatment, and that two-stage alkaline bleaching is definitely better than two-stage ordinary bleaching.

In reply to G. P. Genberg, who inquired as to the increase in time required for alkaline bleaching, Dr. Yorston said that the time was so long that it would not be practical to add a large amount of alkali at the start, sufficient for maintaining an alkaline reaction throughout the whole bleaching operation. The difficulty could be overcome, however, either by using an excess of bleach, by working at higher temperature or by adding a neutralizing agent of low solubility, such as magnesia, which neutralizes the acids formed without unduly increasing the alkalinity. Experiments are at present being conducted on the use of magnesia, but they have not proceeded far enough to be reported on.

McGill Students Study Penetration of Wood

Dr. Otto Maass, professor of physical chemistry at McGill, at the request of the chairman, briefly outlined the work which is being carried out under his direction by a group of ten graduate students. The chief investigation is concerned with the penetration of wood, and comprises the measurement of the rate of penetration at different temperatures and by various reagents through chips of different sizes and shapes, the wood being analyzed before and after each experiment. The absorption of vapors and of electrolytes in liquid solution by wood and by cellulose is also included in the scope of this investigation.

Dr. Maass is also directing the study of measurement of particle size and consistency by light absorption methods, from the results of which it is hoped to finally evolve a rapid and reliable method for determining consistency.

Finally, Dr. Maass referred to the investigation carried out some years ago under his direction by Dr. W. Boyd Campbell on the equilibrium of the water-sulphur dioxide system. This work had elicited much favorable comment and had proved of considerable value in connection with the preparation and behavior of sulphite liquor; and a similar investigation was being undertaken on the water-sulphur dioxide-lime system.

Mr. Ambridge asked what difference had been observed between the rates of penetration of water in dried and green wood. Dr. H. W. Johnston replied the greatest differences were observed with different species of wood, and especially between heartwood and sapwood. There were also considerable differences between freshly felled wood and the same wood after air-drying; but the differences were much smaller between samples of wood that have been air-dried and then made to contain various moisture contents.

Vance P. Edwardes commended the work being done in the laboratories. Much has been said regarding the importance of obtaining practical results that can be applied in the mills, but this must absolutely be preceded by fundamental research, even though the work requires years to bring to a successful conclusion.

Experiment Planned on Sulphite Cooking

Dr. Johnston was then called upon to explain the work which is to be undertaken on sulphite cooking. This will follow somewhat along the lines of Dr. Ross' investigation on alkaline cooking. It is proposed to carry out a very large number of experimental cooks at constant liquor concentration in order to study the effects of time and temperature on yield and pulp qualities as revealed by its composition, strength, beating curve and bleach consumption. The work will follow very much along the same lines as what was done some years ago at Madison by Miller and Swanson, but it will be more comprehensive and the various factors will be better segregated.

Mr. Ambridge suggested that the investigation should include a study of the hot acid system of cooking. At the Anglo-Canadian mill, which is equipped with acid accumulators, it was found that it gave higher yields and produced less tailings, but so far no satisfactory reason had been found to explain these facts.

The Forest Products Laboratories are fortunate in being equipped with a small, commercial-size rod mill, with which a number of tests have already been carried out. Dr. Johnston said that semi-sulphite pulp obtained in 60 per cent yield had been rod-milled at an estimated cost of 85 cents to $1.00 a ton. A very advantageous feature of this machine is that the power consumption is nearly constant, the variation between running empty and loaded being only about ten per cent. It had been found that proper regulation of the consistency was very important, as it is this factor that controls the degree of beating. The tests had been carried out at the request of one of the company members of the parent Association, and in order not to unduly increase the cost, they had been confined merely to the points raised by the member. More exhaustive and comprehensive tests were being planned for the future. Tentative cost figures had been worked out for rod-milling various types of stock, and it was estimated that it should be possible to beat kraft at a cost of about 70 cents to $1.20 a ton.

Dr. Heuser referred to the fact that rod-milling had been found to reduce the bleach requirements of pulp, which was probably due to an opening up of the fibers, resulting in giving easier access by the bleach liquor to the impurities present in the pulp. Mr. Edwardes added that rod-milling had also been found to reduce the lignin content. Dr. Johnston suggested that this might be due to imperfect washing of the pulp after cooking, the trituration to which the stock is subjected facilitating removal of any residual spent liquor not removed in washing before rod-milling.

Professor Keay suggested that rod-milled semi-chemical pulp might not be suitable for the manufacture of newsprint owing to excessive hydration. Mr. Edwardes replied that this trouble would not be encountered with rod-milled semi-sulphite pulp produced from coniferous woods, but that the most serious difficulty met with this type of pulp was the large amount of dirt and specks present.

Closing Address on Subject of Beating

The meeting was brought to a close by the Chairman

calling on Dr. W. Boyd Campbell to give a brief account of his work on beating. This work, Dr. Campbell explained, was undertaken with a view to determining whether or not definite combination of water with cellulose occurred in the so-called "hydration" of cellulose. The vapor pressure curves of both unbeaten and beaten cellulose containing various moisture contents being identical, it was concluded that no combination takes place. In order to explain the properties of beaten pulp, Dr. Campbell considers that beating is simply a mechanical action whereby the external surface of the fiber is greatly increased so that the crystallizing forces of the cellulose can be more effectively exerted in binding fiber to fiber in the sheet. This is essentially the idea held by many practical papermakers, except that the conception of adhesion of fibers to one another by crystallization forces has been added to the idea of adhesion by entanglement.

New Catalogues and Publications

Aetna Ball Bearing Manufacturing Co., Chicago—In the ninth edition of this company's catalogue, just issued, a number of interesting applications of thrust and roller bearings, together with typical mountings for both types of bearings are shown. The complete line of Aetna thrust bearings, retainers and roller bearings is given in condensed form, including their load carrying capacity at various speeds, together with three complete series of roller bearings for light, medium and heavy duty. Copies on request.

G. M. Basford Company, New York City—"Two Men in a Pullman" is a very interesting and well written booklet, presenting this agency's conception of the importance of preparation of advertising copy for business papers. Franklin B. Evans is the author, and the dialogue brings out the weak points in many advertisements, and makes a comparison between a well written advertisement and a poor one.

Combustion Engineering Corp., New York City—A new catalogue No. SG-1 describes the Combustion Steam Generator which is a single unit embodying in an integral design the several elements required in the production of steam. The advantages of the generator are summarized and the construction and development of design clearly explained. The text matter is amplified with a large number of sectional drawings and the book is attractively bound.

Cutler-Hammer, Inc., Milwaukee, Wis.—A new booklet "Keeping Pace with Machine Design" details the construction, operation and application of C-H Magnetic Clutches, including a full description of the newly developed C-H Duplex Clutch. There are many photos showing application of magnetic clutches to various types of machines. The schematic diagrams which demonstrate the action of the clutches are instructive and interesting. Copies on request.

Diamond Rubber Co., Inc., Akron, O.—A booklet of interest to the new conveyor owner as well as the experienced belt user is entitled "Belt Practice." This booklet touches on such practical features of design and maintenance as have a bearing on the welfare and life of the belt itself. The first part of the book is given over to conveyor belt practice while the second covers elevator belt practice. The information contained is based on an interchange of experience with designers and operators of conveying and elevating machinery.

Fansteel Products Co., Inc., North Chicago, Ill.—This company's new product, electro-fabricated tantalum, is announced in a new folder just received. This material is recommended for pipes, coils, tank linings, agitators and other parts that will never need replacement. By this process, tin and comparatively inexpensive tantalum tubing or fabricated parts are coated with desired thickness of copper by a special adaptation of the electroplating process. With this process, it is claimed the necessary strength is retained plus protection against corrosion. Copies on request.

Fisher Governor Co., Marshalltown, Iowa—Fifty years ago this company began as a partnership and the Fisher constant pressure pump governor was developed by William Fisher, founder of the business. To mark its golden anniversary, a very interesting booklet has been issued, giving a brief history of the company and its progress, its products and service. The book is very attractive, with numerous illustrations and having a gold paper cover.

Fuller Lehigh Co., 35 Liberty St., New York City—A new bulletin No. 905 is descriptive of the Fuller Lehigh Circular Burner, a pulverized coal burner of the turbulent type which is widely used for firing pulverized coal through solid refractory furnace walls with a minimum of alterations. The application, construction and operation of the burner are explained and copies will be sent on request.

L. H. Gilmer Co., Tacony, Philadelphia, Pa.—A new V-belt catalogue, issued by this company is comprised of two sections—the first devoted to theoretical and practical illustrations of V-belts themselves and their operation in multiple drives for various classes of service. The second or engineering section, introduces new, simple and original formulae for all V-belt calculations, detailed tables of drives, from fractional to several hundred horsepower and a large chart for quickly determining center distances, belt lengths and useful data. Copies on request.

W. A. Jones Foundry & Machine Co., Chicago—Jones Herringbone-Maag Speed Reducers are described in a new bulletin No. 51. These reducers are designed for use with electric motors, their function being to step down speeds between motors and driven machines. The details of design and construction are outlined very clearly and accompanied with a number of illustrations.

Merck & Co., Inc., Rahway, N. J.—The new 1931 catalogue and price list of laboratory chemicals and reagents was issued in May. Since the previous publication of November, 1929, several new chemicals have been added to the Merck list. Copies can presumably be had for the asking by mill chemists and others interested.

The Meriam Company, Cleveland, Ohio, are introducing the Meriam Pulsation Absorber, a Pulsation Shock Absorber device for eliminating the unsteady reading so often met with where pressure or vacuum gauges are connected to pipe lines carrying gases or liquids having a pulsating flow. The device is described in a leaflet which can be had for the asking.

W. H. Nicholson & Co., Wilkes-Barre, Pa.—The following new literature has recently been issued by this company: Bulletin 431 contains an illustrated description of the "Nicholson" New Style Welded Steel Floats for steam traps, water columns, tanks, float valves, liquid level controls, etc., made for all steam pressures up to 1,500 lb. and hydrostatic pressures up to 2,500 lb. Bulletin 531 contains an illustrated description of a new ¾-inch Style A industrial trap that has been added to the line of machinery manufactured by the company. Copies on request.

Philadelphia Quartz Co., Philadelphia—In commemoration of its one hundredth anniversary, this company has issued a very fine booklet entitled "Beginning Another Century." The compilation of this booklet has entailed much effort and expense. It is artistically printed on fine book paper with antique paper cover. The book tells the story of the founding of the company in 1831 by Joseph Elkinton, and relates the growth and expansion of the business down to the present large organization with nine plants. There are a number of quaint and interesting illustrations reproduced with wood cuts and etchings on tint background, which lend a note of distinction to the booklet.

Schutte & Koerting Co., Philadelphia, Pa.—A new water level gauge called the Televisor is the subject of a bulletin just issued by this company. The Televisor consists of three separate units: transmitter, distributor and indicator. It indicates at one or more distant points the water level in the boiler, tank or other vessel to which it is attached.

SKF Industries, Inc., New York City—Among new literature received are two new bulletins from this company. The subject of one is its new and complete line of Pillow Blocks, featuring four distinct types: the split pillow block for normal and heavy duty standard applications; the unit pillow block for applications where simplicity of installation is desired; the universal type, adaptable for the varying and exacting requirements of machine applications and the roller bearing pillow block, for the most severe applications in industry. The SKF self-aligning ball bearing drop hanger and the ball bearing drop and post types of hangers are also featured. Another bulletin contains descriptive matter and applications of pre-loaded ball bearings for precision spindles.

Standard Oil Company (Indiana), Chicago—A piece of recent literature which has not previously been announced is this company's engineering bulletin entitled "Pulp and Paper Mill Machinery and Its Lubrication." This is a most valuable collection of technical data for the paper mill superintendent, chief engineer or maintenance engineer. Each of the major operations in the mill are taken up separately and the text is profusely illustrated. The recommendations of this company's lubrication specialists have been condensed into a chart showing the operations in the mill and their recommendations. There is also a lubricants consumption cost chart which has been most carefully worked out for keeping costs. Superintendents and engineers may procure a copy by addressing the Technical Division of the company.

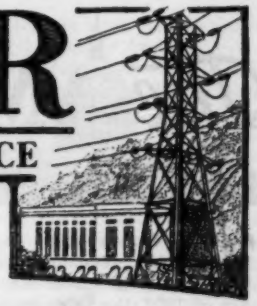
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.—A new 12-page publication describes four types of generators: belt-driven generators, turbine-generator units, portable gas-engine-driven power units, and electric service plants. Part I of the booklet is devoted to a description of the different types. Part II takes up the fields of application, as an aid to the selection of the most advantageous unit for any application. On the last page appears a table of specifications covering the various sizes of each type of generator.

NEW BOOKS

Chemistry in Industry—The Chemical Foundation, Inc., New York, has this year issued a reprint of Vol. II of the book **Chemistry in Industry**, edited by Harrison E. Howe, editor of **Industrial and Engineering Chemistry**. The part which chemistry plays in our modern manufacturing field is told in 22 chapters, the contributions of recognized authorities, written in popular language and therefore nontechnical. Of special interest to pulp and paper men are the chapters on Casein and Rayon. The different varieties of casein and their industrial applications are described and illustrated one of the engravings showing a view in the coating room of the Martin Cantine Company. A thoroughly comprehensive account of the origin of rayon and its later development is given, flowsheets of the preparation of raw material and processes of manufacture being included. Each chapter in the book is provided with an appendix of Reading References for the benefit of those who may wish to extend their studies of particular industries. The book is published at $1.00.

POWER

GENERATION - UTILIZATION - MAINTENANCE



By W. S. JOULE

This section turns the searchlight upon power and its allied problems. It shows up big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

Interpreting the Draft Gauge

ONCE an engineer becomes accustomed to using a draft gauge, he will appreciate it more and more. It practically eliminates guesswork and brings to light conditions which otherwise might never be known. Everyone of them is an important factor in determining over-all efficiency and maximum steam-making capacity. Unfortunately many engineers hesitate to study the draft gauge because they think it difficult. As a matter of fact it is relatively simple, once the principles involved are understood.

For example, suppose a draft gauge is installed so that the draft as measured by the gauge is the so-called "over-fire" draft. The supply pipe is connected to the furnace so as to measure the draft or pressure inside the furnace. Suppose, moreover, that an additional pointer is installed with an additional element connected up to the breeching or last pass, at the stack damper. With the two pointers operating upon the same scale, one showing the over-fire draft and the other the draft at the last pass, the engineer has an accurate guide as to the condition of his equipment, the condition of his furnace and the rate of combustion, and is able to foretell from three to five minutes in advance that a drop in steam pressure will occur unless the rate of combustion is increased.

Where the draft gauge is installed, the draft "over the fire" for various rates of combustion and with a clean fire of the correct thickness should be known. At a so-called constant rate of combustion, hence draft, a decrease of over-fire draft as indicated by the pointer may be due to any one of the following reasons:

Fuel bed too thin, needs replenishing.
Holes, cracks, and fissures need closing up.
Fire too thin at rear.
Fire too short on travelling grates.
Fire needs leveling.
Ash dump not closed properly.
Leakage due to open firing door through furnace walls, etc.

Since a drop in steam pressure will occur when a fire is too thin, when holes occur so that doors must be opened and the fire cleaned, and green coal must be thrown on to make up for that which has been burned, it is obvious that a decrease in steaming rates will occur, hence a drop in steam pressure. This explains why the over-fire draft serves notice three to five minutes in advance that a drop in steam pressure will take place unless the fire is attended to.

When the over-fire air and also the draft in the last pass show an increase, several conditions may have brought this about. Of course, a more rapid combustion rate may be one reason. If the combustion rate remains the same, then the reason for an increase in over-fire draft and draft in the last pass can be explained by anyone of these conditions:

Fuel bed too thick.
Fuel bed clogged with ash or clinker.
Excess of small sizes of coal.
Fire needs cleaning.
Lack of air supply in boiler room,
due to closed doors and windows.
Ashpit needs cleaning, interfering with air supply
to fuel bed.

An engineer who "knows his draft gauge" will also find much valuable information in the relative position as well as the relative distance between the two pointers showing the over-fire draft and the draft in the last pass. For example, since the spread between the over-fire draft and the draft in the back of the rear pass indicates the differential or loss of pressure through the furnace and boiler tubes, the space between the two pointers will fluctuate with the load, since it shows approximately, the amount of gas flowing across the heating surfaces. Since the amount of gas passing over the heating surfaces will be practically constant for a given combustion efficiency and a given rate of combustion, a variation in this differential or draft loss will indicate that something else has occurred. Air leaks through the setting, obviously, will reduce the spread below normal. The accumulation of soot will tend to cause an increase in the draft loss above normal. Where a bottle-neck condition exists so that the furnace is getting insufficient air, the over-fire draft will be high as well as the draft in the back pass, the former approaching the latter. From these few remarks it can be seen that the draft gauge is very valuable, particularly when it shows simultaneously the draft over the fire and in the last pass. With these two drafts known, the engineer is able to operate his fires and equipment intelligently.

Size of Coal Best Suited to the Job

THERE is a size of coal best suited to each of the various types of stokers. This is the size of coal that should be used. Higher draft is required for the smaller sizes of coal because the fuel bed is less porous and creates greater opposition to the flow of air through the fuel bed. Where there is lack of stack capacity, larger sizes of coal will have to be used than where there is ample stack capacity. Larger sizes cost very much more than smaller sizes, of course.

Many power plants are using much larger sizes of coal than they require, under the impression that combustion efficiency is improved by doing so. The truth is that combustion efficiency is lowered while the cost of fuel is increased, and the maximum rate of combustion decreased, with a tendency to a higher loss of carbon in the ash pit.

Hardly of less importance than using the smallest size of coal that will suffice, is that problem of using coal of uniform size. Where the size is not uniform a loss in the rate of combustion as well as in combustion efficiency is inevitable. For example, suppose a chain-grate stoker is using lumps of two different sizes. If the chain-grate is traveling at the correct rate for the smaller lumps, so that by the time they are burned they have been carried over to the water back, the larger lumps have not yet been consumed and will be dumped into the ash pit with a correspondingly high loss of unburned carbon. If, on the other hand, the speed of the chain-grate stoker is adjusted to be most suitable for the larger lumps, the smaller lumps will have burned out, so causing holes in the fire with excess air in consequence. It is very important, therefore, to use the smallest size of coal that will suffice and at the same time to insist upon uniform sizes.

The draft gauge will immediately bring to light what draft is available and to what extent the smaller sizes of coal can be employed. A very real saving in cost per ton is possible in many plants by this one simple change of coal sizes.

The Month at Washington

THE first year of operation of the Tariff Act of 1930 yielded revenues amounting to nearly $417,000,000. While the rates were higher than those of the Tariff Act of 1922, the price levels were lower in the last 12 months than in the preceding year and general business was in lower volume.

The new Canadian tariff is not expected to affect our trade according to predictions issued by the Department of Commerce, which adds however, that only time will reveal the influence of the higher rate levels. Upward revision was long anticipated, and now has become an actuality, with new rates on 174 items.

Canada has been the best customer of the United States over a period of years and last year we exported commodities totalling $659,300,000, which constituted 64.6 per cent of Canada's foreign trade.

Simplified Practice Gains in Industry—The Bureau of Standards reports that more than 10,000 firms are now co-operating in simplified practice recommendations drafted by the Bureau, with savings of more than $250,000,000 annually to industry. The most remarkable thing about this steady rise in numbers is the increasing interest in simplified practice as shown by consumers of the commodities simplified. The present demand on the services of the Bureau by the user group almost equals that of the manufacturers, and has resulted in a closer co-operative relationship among producers, distributors, and consumers.

Trade Practice Conferences—The Trade Practice Conference has met with the universal approval of business, says Wm. E. Humphrey of the Federal Trade Commission. The officials of the Government have all endorsed it. Industrial organizations unanimously favor it, and the results achieved justify this universal commendation, he said. No other policy of the government has ever so promptly and greatly benefited business, and with so little expenditure of time and money both by the government and by industry. Formerly most of the questions were solved by tortious and expensive litigation. Opposition to the trade practice conference comes only from a few lawyers, either due to selfishness or ignorance. Persistent reports have been spread throughout the country that the Commission has definitely abandoned the trade practice conference. Such reports are wholly false and have no foundation in fact, says Mr. Humphrey.

Aliens Admitted—One significant factor in the domestic economic and labor situation is the fact that the number of aliens admitted in the fiscal year just closed was under 100,000 or the fewest in 69 years. This is due to the policy of the Immigration Bureau to respect the rights of native-born more than those of the foreign-born. Last year 241,700 aliens were admitted. A noticeable trend this year is emigration, which increased, due probably to the depression, because dollars apparently go further in the native lands than in America, and some aliens find it advantageous to go to their home countries at cheap rates and live there at less expense.

Fatigue Increases Accidents—Fatigue and visual defects increase factory accidents, says the Public Health Service in a recent statement. Physical and mental impairments probably are the underlying causes of a large portion of industrial accidents. Fatigue, either mental or physical, and visual or auditory defects, often unrecognized, are undoubtedly significant in their relationship to the basic causes of numerous mishaps. It cannot be denied that unrecognized defects in hearing and sight have been important in probably a large percentage of accidents, which indicates the necessity of having a strict physical examination, particularly of the senses of hearing and seeing, before employment.

Unemployment Insurance—Senator Couzens says that at the next session of Congress he will sponsor legislation proposing a system of unemployment insurance. He says he will also sponsor an increase in internal revenue taxes.

Care in Extending Credit Abroad—The Bureau of Foreign and Domestic Commerce in a recent statement urges American business men to use care in extending credit abroad. Business interests are advised to give "generous treatment" but at the same time to employ caution. Foreign buyers of American commodities are, in many instances, faced with extreme problems in meeting the demands of their Governments, it was explained, and their business must be fostered by generous treatment as against the time when conditions become normal. This method will result in increased business both during present conditions and after trade has been resumed in normal volume.

Business Conditions—Gains have been recorded in both trade and employment, with signs of improvement noted among many of the 27 localities covered in a recent survey by the President's Emergency Committee for Employment. The New England area and the midwest lead.

Four Federal agencies report the economic trend better, with gains of a definite character being registered, heartening business. Impetus was received from the debt proposal and American trade representatives abroad report an upward turn after a long season of recession.

Industrial gains are also held to indicate a turn for the better, with the low point of the two-year-old depression reached in January. Four consecutive monthly increases are noted, with output 11 per cent higher than in midwinter, with finished products making a most favorable showing.

Employment and Pay-Roll Totals—The Bureau of Labor statistics reports changes in employment and pay-roll totals in June as compared with May, based on returns from 46,301 establishments in 15 major industrial groups, showing a decrease of 0.9 per cent both in employment and pay-roll totals. With 1926 as a basis of 100, we find the following changes:

	Employment			Pay-roll Totals		
	1930	1931		1930	1931	
	June	May	June	June	May	June
Paper and printing	99.6	92.0	92.0	104.9	93.4	92.7
Paper and pulp	94.6	82.0	82.6	96.1	75.5	75.2
Paper boxes	87.8	82.0	81.4	90.0	82.1	81.7
Printing, book and job	100.8	91.9	91.5	105.6	92.6	90.9
Printing, newspapers	109.1	107.6	107.7	114.3	110.2	110.3

Wholesale Prices—The index number of wholesale prices computed by the Department of Labor shows a further decline in June, based on a survey of 550 commodities. With 1926 as the basis of 100, we find the following changes for paper and pulp:

June 1930	May 1931	June 1931	Purchasing power of the dollar, June, 1931
85.6	81.4	81.3	1.230

New Rules of Business Practice—Trade practice rules adopted by approximately 80 industrial groups during trade practice conferences held in the last several years under the auspices of the Federal Trade Commission have been submitted with suggested changes by the Commission to the industries for their acceptance within 60 days, including among others, wall paper, box set up paper; paper bag; paper kraft, waxed paper, etc.

Resale Price Maintenance Squelched—In a report recently issued by the Federal Trade Commission, no present need for resale price legislation is required or desirable. Thus the Commission sent its concluding report to Congress which finally squelches the desirability of resale price maintenance legislation. The Commission believes it would be difficult to provide government regulation of price maintenance that

would bring relief to makers of trade-marked goods without injustice to consumers and at the same time meet the tests of practical administration.

Interstate Commerce Rulings—An increase of 15 per cent in all freight rates and charges is declared to be necessitated by emergency, according to the railroads of the United States which propose to make no exceptions in any commodity, in filing an application with the Interstate Commerce Commission. All carriers united in their appeal to bar exemptions. The carrier's plea for a sharp rate advance affecting freight traffic declared that an emergency situation existed throughout the country which has jeopardized carrier credit and threatened to disrupt the ability of the roads to provide the public with an "adequate and efficient transportation service."

In Berkowitz Envelope Co. vs. Atchison, Topeka & Santa Fe Rwy., No. 22,201, the Interstate Commerce Commission has just ruled that rates and minimum weights on envelopes, in carloads, from Kansas City, Mo., to points in Wisconsin, Missouri, Illinois, Indiana and Kentucky and to Mississippi River crossings in Arkansas, Tennessee, Louisiana and Mississippi, were unreasonable and unduly prejudicial, and prescribed reasonable and nonprejudicial rates for the future.

First Retail Business Census—The retail business of the nation totals 53 billion a year, says the Census Bureau, which measured the volume of sales officially for the first time in history. All classes of data are made available, number of stores, amount of distribution and volume of purchases made by consumers. Of the total retail sales $50,000,000,000 was handled through 1,549,000 retail stores and the balance was sold to the ultimate consumers by direct sales of manufacturers and other producers. There are 12.6 retail stores per every 1,000 inhabitants, and the average store does an annual business of $32,297. The average per capita purchase at retail amounts to $407.52 or average retail purchases per family of from $1,250 to $2,000 annually.

Recent Publications—The U. S. Tariff Commission has just made available a statement of statistics covering its operations under Section 336 of the Tariff Act of 1930 for the year ending June 1, 1931, comprising the official count of applications received, commodities involved, investigations ordered, investigations completed, reports rendered, and relevant data in further explanation under many of these classifications.

Two thousand current business facts are presented in more attractive form in "The Survey of Current Business", issued by the Department of Commerce, with discussions of trends in various fields of business and industry in addition to the comprehensive business indexes. The survey in its revised form brings together a convenient reference for a whole range of official and private statistics which relate to business activity in the United States.

Paper Notes of Interest—Whether a new shipment of Russian pulpwood, detained by the Customs Service in New York, is product of convict labor and therefore inadmissible under the new tariff law, is now being considered by the Treasury Department after conference with the Amtorg Trading Corporation and the International Paper Company.

With foreign dumping seriously hurting the domestic pulp and paper industry, a 25 per cent ad valorem duty on all pulp imports would do much to improve the domestic condition, says the President's Timber Conservation Board. If Congress is unable to levy this duty at its next session, an emergency provision could be added to the anti-dumping law, claims Ossian M. Anderson, president of the Puget Sound Pulp and Timber Company of Everett, Wash.

Production of newsprint paper from southern pine has been accomplished experimentally at the Forest Products Laboratory of the Forest Service, and if the process proves successful on a commercial scale, it may provide an entering wedge for the newsprint industry in the South.

A new use for paper bags is being developed by department stores to deliver women's dresses and coats and men's suits, which while more costly than paper boxes, the difference is offset by the greater satisfaction of the customer in receiving purchases without creases or wrinkles. More paper bags are also sold to tourists to carry their clothes in the cars unfolded in suitcases. Another advantage to stores is the saving of time expended in wrapping merchandise for delivery, paper bags being three times as fast as by the box method. The lower part of the bag is sealed and as soon as the sales ticket has been pasted on the bag, it is ready for delivery.

The National Forest Reservation Commission of the U. S. Forest Service has announced the approval of 16,000 acre purchase for national forests, mostly in Arkansas and some in Oklahoma. A few purchases are also being made in the South, in the White Mountains and in the Lake States. The total purchases are 16,558.30 at a cost of $52,624.82.

The Bureau of Standards has been studying on a semi-commercial scale the manufacture or bond types of papers from commercial highly purified wood fibers, suitable where strength and permanency are desired. The object of the work is to determine the quality of paper which can be made from such fibers under favorable conditions, how to obtain this quality, and the extent to which variables commonly encountered in the paper making process affect the quality of papers made from this type of fiber. A copy of the preliminary study report may be had on request.

❖ NEW ENGLAND ❖

Manufacturers and Merchants Have Annual Field Day

New England manufacturers and merchants held their annual field day at the Hotel Preston, Swampscott, Mass., and the Salem Country Club, Danvers, Mass., on June 8 and 9 this year departing from the custom of the past ten years by holding an evening meeting preceding the day of the annual golf tournament. The Boston Paper Trade Association, the social organization which provides the means of the three annual get togethers of the producers and distributors in this section, has the happy faculty of being in an ample financial condition every ten years or so; the condition on this occasion being so ample that members were free guests of the association.

The gathering met at the Preston on Monday evening, enjoyed part of the sports program arranged by Chairman H. C. Ham, dined at the hotel which had been reserved exclusively for the affair and held a brief business meeting.

Albert Smith, association president and head of Keith Paper Co., was presented with a silver putter; tribute was paid to John E. A. Hussey, New England paper trade dean, who for many years has been International Paper Co. sales agent, and the manufacturers enjoyed the antics of Floyd Blackman, New England Paper Merchants Association president, who with Ed Bement, the Merchants Association secretary, staged one of their Amos and Andy parodies with the paper trade on the butt end of the sallies.

New members were inducted as follows: R. B. Anderson, Whitney & Anderson, Springfield; W. H. Anders, recently elected head of Nashua River Paper Co.; T. K. Davis, sales manager of the same company; Carl Lincoln, general manager, George W. Wheelright Paper Co.; J. R. Whitney, Whitney & Anderson; George E. Bardwell, Carew Mfg. Co.; Edward A. Sitzer, Eaton Dikeman Co. and George Wise, Boston.

The golf tournament the next day was won by J. R. Whitney, new member, second net by Floyd Blackman, D. F. Munroe Co.; best gross by Roger Taft, Hammermill Paper Co. Karl Ways, Nashua River Paper Co., won first net Class B; L. E. Maglathlin, Strathmore Paper Co., second net, and A. P. Mitchell, Riegel Paper Co., best gross.

Hollingsworth & Vose Co., has completed an addition to its offices at the East Walpole mill, which will house the main offices of the company on and after August 1. On that date the Boston office for many years headquarters, will become a branch, and sales, purchasing and general executive departments will be installed at the mill location. The International Purchasing Co., which purchases the old rope used in the papermaking operations of this and several other mills, will move into part of the H. & V. Company's old offices at 333 Washington street. N. Bartlett, H. & V. traffic manager, will take over the additional duties of traffic

management for the rope company while Emery St. George of the latter company will join the Hollingsworth & Vose Company.

Connecticut Valley Supers Meet at Providence

The Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association held its annual spring meeting in Providence, R. I., at Narragansett hotel, on Saturday, June 13, under the chairmanship of Arthur B. C. Drew, Lewis E. Weiser, chairman of the division, being prevented from attending by illness.

At a general meeting in the afternoon, two papers were presented, one by K. M. Nahikian, chief chemist of Brewer & Co., Inc., Worcester, Mass., on "Lime, Its Manufacture and Uses in the Chemical Industries," and another by Richmond W. Smith, of the Bird Machine Company, South Walpole, Mass., on the operation of the Bird Centrifiner. Mr. Nahikian discussed the sources of limestone and explained the differences between lump lime and hydrated lime in a very interesting way. Questions were asked concerning the effect of lime on rosin sizing and if it could be combined with mineral fillers. In reply he said that lime entered into combination with rosin to form calcium resinate and that if lime was used in a soluble form it could be combined with certain other mineral fillers.

Mr. Smith exhibited a large colored chart to show the operation of the Bird Centrifiner as a machine for the removal of dirt from paper stock. At the close of the business session, the thanks of the division were expressed to the authors of papers and to Mr. Drew, whose work in arranging for a successful meeting was praised by everybody.

Some 50 members and guests were in attendance, a large number of ladies being present. While the members were discussing mill problems, the ladies were treated to a bus ride through the beautiful parks and around the shore road of Providence, which was greatly enjoyed. At a banquet in the evening, the tables were decorated with flowers from the gardens of the Drew family at New Bedford, Mass. Music was provided and there was a vaudeville entertainment during the dinner courses, followed by dancing at the close of the banquet.

Chairman Drew opened the speechmaking at the banquet with a cordial address of welcome and improved the opportunity to thank all who had assisted in making the meeting the successful one it was. He then turned over the proceedings to John J. White, of Holyoke, who acted as toastmaster in his own inimitable fashion.

Clemens J. France, manager, Industrial Development Division, Providence Chamber of Commerce, was introduced and made some prophetical utterances on the future of cellulose, the title of his address being "Twenty-five Years Hence." Cellulose was to him the most wonderful thing in the world and he said that few people even in the paper industry could imagine the numerous useful and profitable applications that would be made of it in the next quarter of a century.

A telegram was read from Chairman L. E. Weiser regretting his inability to attend and conveying his wishes for a good meeting.

The Connecticut Valley Division enjoys the distinction of being the first of the local divisions to get an official communication from Roy H. Kelly, following his election as president of the American Pulp and Paper Mill Superintendents' Association. Mr. Kelly wrote to "Jack" O'Connell of the Case Manufacturing Company, Unionville, Conn., asking him to represent the national officers and convey his good wishes to the Connecticut Valley Division. A committee of four was appointed to conduct Past National President O'Connell to the speakers' table where Toastmaster White presented him to the banqueters in a laudatory speech, to which fitting response was made by Mr. O'Connell, who urged all members to make the Connecticut Valley Division a great success this year by close attendance on meetings and by co-operating with national and divisional officers.

With a final word of praise for the excellent work done by Mr. Drew in arranging for the meeting the banquet proceedings closed and dancing was enjoyed till a late hour.

Traffic Items

New England Freight Association has docketed the following proposed rate changes during the past month:

Wood pulp from Portland, Me., to Chataugay, N. Y., rate cancelled as mill is closed.

Pulp and screenings from Campbellton, N. B., to East Walpole, Mass., and Phillipsdale, R. I. (Bird & Son, Inc.) new rate of 35¢, proposed to permit movement of traffic.

Waste paper to Fort Edward, N. Y., from New England reduced as follows: from Brockton, present 32¢, proposed 28.50¢; Providence, present 28.50¢, proposed 25¢; Holyoke, present 28.50¢, proposed 25¢. New York to New London, Conn., present 16¢, proposed 14¢ to meet water competition.

To meet water competition, paper box makers propose a cut of 3¢ in the carload rate on paper boxes from Palmertown, Conn., New York, and a reduction from class rates to a commodity rate of 14¢ carloads from New London to New York.

An export rate from Madawaska, Me., on printing, wrapping and board of 25¢ is proposed to Montreal. Export destinations are given as Australia or New Zealand.

Gummed sealing tape from Bellows Falls, Vt., to Winston Salem and Atlanta, Ga., present rates 67½¢ and $1.00, reductions proposed to 46 and 69¢.

Rate on pulp from Hoboken, N. J., to Hoosac Tunnel, Mass., advanced 2½¢, the same as from New York Lighterage points.

P. J. Dowd, of Holyoke Traffic Bureau and chairman of the Paper and Pulp Committee of New England Shippers Advisory Board, reporting on anticipated carloadings for July-September inclusive, states that newsprint producers anticipate a 10 per cent decrease as compared to last year, other papermakers agree that decreases will be five per cent or less compared to the same period in 1930.

Hearing of the New England Paper & Pulp Traffic Association's complaint requesting decreased bituminous all rail rates from Pennsylvania has been postponed until October.

Paper Companies have been among the first to patronize the new overnight speed freight service offered by the Boston & Maine R.R. from Portland to New York City. A consignment of export wrapping paper and bags was in the first shipment.

Stockholders have confirmed the plan of Advance Bag & Paper Co., directors to move the company's big machine 156 inches wide, from Howland, Me., to the recently constructed mill at Hodge, La. The machine is being dismantled and will be moved by rail to New York and thence by water to a southern port. The removal includes the machine in its entirety, some jordans, beaters and pulp mill equipment leaving sufficient to operate the smaller 112-inch machine which remains at Howland. The company has resumed production on this small machine after a five-month suspension and is also operating some of the bag machines at that plant. The power plant fired by natural gas at Hodge is to be expanded and a new boiler installed. The company's executive offices remain in Boston.

Pratt Paper Co., Boston is moving to 136 Federal street from 159 Devonshire street owing to demolition of the old building.

American Writing Paper Co., Carew Mfg. Co., Byron Weston Co., Parsons Paper Co., to name a few have definitely informed the Boston trade that price cutting on rag content papers is out of the question and that none is in contemplation. Praising a Boston merchant who has taken a very strong stand in opposition to price cutting as being valueless in getting additional business, President Willson of the A.W.P. Co., stated that present prices of fine papers are low rather than being too high in view of profits that can be derived.

In sharp contrast to the action of other commodity markets, bitumious coal prices slumped sharply the week that President Hoover's debt moratorium was announced. New River and Pocahontas nut and slack declined from $4.50 to

$4.25 at Boston. On July 1 high grade low volatile coal was offered at $4.17 Providence. Leading buyers of old rope have reduced their bids from 2.25¢ to 2¢ on domestic No. 1 Manila and from 2¢ to 1.75¢ ex dock on foreign.

Russell Paper Can Co., of Chelsea, Mass., has been chartered with 5,000 shares no par capital. Harlow M. Russell is president, M. H. Sidebotham of Newton is vice president.

The Acme Paper Box Co., of Boston manufactures of paper boxes, has been incorporated with $100,000 capital. S. A. Cohen is president and treasurer.

Plan for Standardization of Bags and Boxes

The Retail Trade Board of the Boston Chamber of Commerce has published a report prepared by a paper bag company the object of which is to prove that much money and time can be saved by the substitution of paper bags for wrapping paper and twine in the sale of many articles.

The Retail Trade Board has fostered a plan of group buying of paper and paper boxes by the Boston department stores. All set up boxes are now purchased through one agency connected with the board and a considerable volume of the kraft used is purchased in the same manner. The board is at work standardizing and simplifying the sizes of boxes, planning to reduce the number of set up box sizes from about 370 to 70 or 80 and reducing the number of jewelry box specifications from around 400 to approximately 50 or less.

Following the reduction in price by Hammermill Bond, leading sulphite bond manufacturers in New England followed suit and effected similar cuts in all their standard lines. Since then book paper mills and at least two manufacturers of index and printing bristols have effected various cuts. In the case of coated and machine finish books reductions in some cases ranged up to ten per cent, while no specific reduction was made by the bristol makers, but varied from item to item. The lowest price on coated paper was 6.75¢ quoted by one mill on carload quantities only.

Eastern Manufacturing Company of South Brewer, Me., refrained from the usual dividend declaration on their preferred stock last month, normally payable July 1. The stock had been on a $3.50 annual basis.

International Paper Co., continues to use fuel oil at its Maine mill. A tankload with 65,000 barrels arriving at Portland recently for that company.

The long lumber business of the Brown Company at Portland, Me., has been sold to the Diamond Match Co. Brown Co., at one time very large factors in lumber have transferred most of their activities of late years to pulp, paper, chemicals and special products. They continue to operate a sash, blind and door business in Portland. The company's wharf at Portland is not involved in the sale and it will be available for other activities of the company. The sale of the lumber business involved about $100,000.

For a new line brought out during a depression year, American Writing Paper Co's., Eggshell Text in colors on the market about three months has made a very distinct impression. The paper is made in two sizes, five colors and white. Regular distributors are given the privilege of stocking the line.

The Paper Committee of the National Association of Credit Men met at the Hotel Statler Boston during the week of June 22 and during the general convention of the association held at the same place. The Paper Committee met under presiding officer T. K. Cree, Alling & Cory, Co., Pittsburgh. Charles A. Esty, managing director Carter Rice & Co., addressed the group on the credit plan of the Boston fine paper merchants. Briefly, this involved the compilation of overdue accounts by an outside agency, such information being relayed to the subscribing merchants monthly, who act according to the dictates of their best judgment with the information in hand. Mr. Esty expressed the view that the more drastic system employed in New York would not be well received or be at all applicable in this section.

Consolidation of Wakefield Paper Box Co., with Climax Paper Box Co., of Cambridge, W. S. Babcock & Son of Somerville, and W. S. Barnes & Son of Boston into the Consolidated Paper Box Co., has been consummated. It became the largest manufacturer of a general line of paper boxes in New England. Capitalization is $200,000. A new plant formerly the Derby Desk Co., in Somerville has been occupied by equipment from the four Companies. A. C. Wismall of the former Wakefield company, is president and A. M. Bond of Climax is treasurer.

◆ NORTHERN NEW YORK ◆

Oswego Board Sees Good Future

H. Edmund Machold of New York City, who recently became chairman of the board of the St. Regis Paper Co., paid a visit to Oswego the latter part of June at which time he said business conditions had improved a great deal.

"We look to big things for our local group of industries," Mr. Machold said. "The Oswego Board Corp., in 20 days in June, has done more business, in the reduction of the inventory of stocks on hand, than at any time in its history, and within a few days there will be announcement that this plant will go on full time and capacity operation, and we feel it will be a continuous proposition from now on. John Weiner, plant manager, has some new developments in the line of products to be produced, as well as our staple lines, and while like all new building propositions, it has taken sometime to reach a large volume of sales, that time has come, in spite of conditions in the building world to-day, and the future of this plant gives promise, eventually of being greater in every way, expanding to meet the added demands we are certain will come starting at the present time. The paper mill and bag plant has a future comparable to that of the board plant."

W. E. Armstrong Resigns

W. E. Armstrong has recently resigned as president of the Armstrong Chemical Co., Inc. of Canandaigua, N. Y., and has disposed of his stock and interests in the firm to Closs, Jenkins & Masten of Canandaigua.

Mr. Armstrong is well-known in the pulp and paper field because of years of close association with it, particularly with the mills of the North, East and South. He has made no plans for the immediate future other than to rest for a time before making any new connection.

Oswegatchie Plant to be Sold

Former District Attorney E. Robert Wilcox of Watertown has been appointed referee to sell the physical property of the Oswegatchie Paper Co. under action brought by the Watertown National Bank as bondholders' trustee, to foreclose mortgages of approximately $1,900,000. The appointment was made by Justice Clayton I. Miller. Attorneys Cobb, Cosgrove, Harter & Wright represent the plaintiff. Attorney Sam Child is committee for the first mortgage bondholders. The date for the sale has not yet been set but it is expected it will be soon.

It is reported that a plan is being considered whereby some of the second mortgage bondholders may bid in the property, reorganize and operate the plant. There is a mill with a modern Bagley & Sewall machine at Natural Dam, and a pulp mill at Emeryville. There are water powers with both

mills and in addition there is a timber tract of 25,000 to 30,000 in the towns of Diana, Lewis county, and Webb, Herkimer county. There is a valuable stand of hardwood on the tract and a second growth of pulpwood, the virgin pulpwood having been cut off about 25 years ago.

Charles R. McMillen, who has resigned as president and become chairman of the board of Union Bag & Paper Corp., has been elected vice-president and director St. Regis Paper Co. Mr. McMillen succeeds M. B. Wallace as chairman of Union Bag & Paper Corp. Alexander Calder has been elected executive vice-president of Union Bag & Paper Corp. in charge of operations.

A wage agreement whereby employees of the organized mills of St. Regis Paper Co. will accept a reduction in scale over last year is understood to have been reached as a result of a conference between company officials and officers of the union brothers at Watertown. Definite amount of the reduction scale could not be learned but it is said employees receiving 50 cents or less per hour will not be affected.

J. A. Wiener, of Oswego, N. Y., has recently made a deal and signed a contract with the Dorr Company, of New York City, for the sale of Wiener pulp refiners.

❖ MICHIGAN ❖

T.A.P.P.I. Fall Meeting to Be in Kalamazoo

At the last regular meeting of the Paper Technologists Club, Harold M. Eastman, of the Paper Makers Chemical Corporation, was the principal speaker. Mr. Eastman presented to the members a list which he had prepared of the factors in the order of their sequence in the papermaking process. These factors were given in the order which Mr. Eastman's personal experience has led him to believe is the order of importance, but from the discussion which followed, it seemed others have had different experiences.

The second matter of importance at this meeting was the consideration of the new charter from the Technical Association of the Pulp and Paper Industry.

The Paper Technologists Club which was organized in Kalamazoo five years ago for the intensive study of paper mill manufacturing problems has decided to become a section of T.A.P.P.I. Accordingly, a charter was applied for some months ago and at this meeting the new charter was adopted as read.

The first big activity of the new Kalamazoo Section of T.A.P.P.I. will be the sponsoring of the fall meeting for 1931 which will be held on September 24 to 26.

The general chairman for the fall meeting will be R. A. Hayward of the Kalamazoo Vegetable Parchment Co. and he has chosen for his committee chairmen, men who haye shown their abilities in the conductance of the Paper Technologists Club activities.

Publicity is to be headed by W. Kent Kidder and he will have for assistants, Earl S. Webber, secretary of the Kalamazoo Chamber of Commerce, and Ernie J. Turner, of the Paper Makers Chemical Corporation.

The Program committee is to be headed by E. F. Whittington who has had charge of programs in the Technologists Club since its inception and he will be ably assisted by Carl C. Schneider, of the Hawthorne Paper Co., and Max D. Bardeen, of the Lee Paper Co., who is the present chairman of the Kalamazoo Section of T.A.P.P.I.

Arrangements other than program will be handled by a very capable committee headed by Frank Libby, of the Kalamazoo Vegetable Parchment Co. The other members of the committee will be C. E. Mueller of the Paper Makers Chemical Corp. and Elbert G. Milham of the Bryant Paper Co.

A Committee of Exhibits will be headed by Harry C. Bradford, of the Rex Paper Co. who has not as yet picked his assistants.

The Administration Committee which will handle the finances will be headed by W. J. Lawrence of the Paper Makers Chemical Corp. and he will have Arthur C. Dreshfield, of the same company, and John C. Wood, of the Kalamazoo Vegetable Parchment Co., to assist him.

The ladies will be taken care of by a committee headed by Mrs. C. L. Bachelder and she will have as her first lieutenants, Mrs. E. F. Whittington and C. L. Bachelder.

Some very novel features are being planned for the program this year and should prove very interesting to all who attend. One feature will be the display ads for which the committee on program are soliciting. The committee guarantees that in no case will two pages of advertising face each other. All advertising pages will face some portion of the program and this is expected to be a great advantage to the advertiser. Firms interested in space should get in touch with Mr. Whittington who can be reached in care the Sutherland Paper Co.

More details of the meeting will be given in our next issue.

Chief Engineers Hear Address on Smoke Disposal

The principal speaker at the June meeting of the Chief Engineers Club of Kalamazoo was J. J. McDowell, director of smoke abatement, Columbus, Ohio.

Mr. McDowell spoke very interestingly on the matter of smoke disposal and proved exceptionally well posted on the subject. Not being connected with any sales organization made it possible for Mr. McDowell to outline the good points of different kinds of equipment and could, with a clear conscience, also outline the undesirable features of these same pieces of equipment.

The discussion was quite general as Kalamazoo is in a bad position from the smoke nuisance and everyone is interested in the most effective method of disposing of it.

The July meeting will be held in Holland, Michigan.

Cost and Tech. Men Hold June Meeting

At the regular June meeting of the Cost and Technical Association of the Kalamazoo Valley, Robert S. Perry, who is now associated with the Paper Makers Chemical Corporation, gave a very interesting outline of the history of alum. An account of Mr. Perry's address on this same subject before the Superintendents Association, was reported in the June issue of THE PAPER INDUSTRY.

At this meeting, some of the side lights were touched upon such as the settling of a feud in the Kentucky hills and many other side issues that makes the romance of alum interesting.

The second speaker was G. P. Williams who spoke on "Time Study." Time study is not the outcome of modern industry as many like to think. There are records which show that time studies were made as early as 1540, and in 1760 studies were made to establish the cost per unit in pin making in France.

Just what is base rate? This is a term which seems to be more or less confusing to most people. Mr. Williams defines it as "The value of the operation in question." This will mean, of course, that a special base rate must be established for each individual operation, or as is done in some plants, where there is a multiplicity of operations on some particular unit which could easily be combined and called one operation, a rate or value is established for the group of operations.

When going into a plant or department to make time studies it is quite essential to get the co-operation of the foreman. Even if you have the good will of the men, you cannot succeed without the backing of the foreman. Sometimes this co-operation takes longer to obtain than the time studies themselves.

Many questions were asked as to whether time studies could be made and a group bonus system applied to a paper machine operation and other departments of the paper mill. Mr. Williams stated that there are instances where a group bonus system just simply cannot be applied but these are rare and he felt sure that the paper machine could be put on such a basis although he had never tried it and might find that it could not.

WISCONSIN

One of the newest products of the Victory Bag & Paper Co., Marinette, will be a high grade line of toilet paper distributed through retail outlets under the trade-mark "Nap-O-Lin." A national advertising campaign will be used to initiate the sale. Paper will be supplied from the Park mill of the Marinette & Menominee Paper Co., Marinette and it is expected the mill's present operating status of 90 per cent of capacity will be increased. The Victory mill, one of the Continental Paper and Bag Corporation's group, was shifted from bags to tissue and towels in August, 1930.

At the Peavey Printing and Paper Co., Ashland, a converting machine has been added for rolled and interfolded paper towels, at a cost of $2,500. Its capacity is 25,000 paper towels per hour. Three more employees have been added, according to W. A. Peavey, general manager.

Better quarters in the drying loft of No. 3 mill of the Fox River Paper Co., Appleton, have been made possible by raising the roof and adding to the height of the walls. A "cat walk" used by machine tenders will no longer be necessary. The company also is doing some remodeling at its Telulah mill, where an addition is being placed above the beater room so as to give more working space. It was necessary to shut down the mill while a new roof was being built. An extra day a week in addition to the four day schedule of the last four months was provided about 50 men by repainting all the buildings in the Fox River group.

Consolidated to Have Increased Power

Increased power will be supplied the Consolidated Water Power & Paper Company's mill at Stevens Point, when improvements are completed on its power dam on the Wisconsin river. The head of the dam is to be raised one and a half feet. Flowage rights were acquired in all adjacent lands so nothing would hamper the change. W. F. Thiele, chief engineer of the company, is in charge of the work.

The Consolidated company was the recent victor in a suit brought by the Federal Land Bank of St. Paul to force the company to buy a farm of 360 acres. It was contended that the Consolidated dam at Biron damaged the lands but the jury found otherwise.

A. P. Woodson assumes the presidency of the Mosinee Paper Mills Co. as a result of the annual meeting of the company at Mosinee recently. John F. Ross and George L. Ruder are vice-presidents, H. L. Dessert is secretary, and A. L. Kreutzer, treasurer. Mr. Woodson also heads the Bay West Paper Co., Green Bay, a converting plant of the Mosinee Co., whose stockholders had their annual meeting at the same time. Mr. Dessert is vice-president, Mr. Ruder, secretary, and F. P. Vaughn, treasurer. Some improvement looms ahead in the company's manufacture of kraft products.

Forestry News

New progress is being made in the conservation of Wisconsin timber for the paper and lumber industries. A survey has been made covering the future construction of 600 miles or road costing $750,000, in federal forest preserves in the state according to reports of G. E. Lautz, road engineer. The main purpose is to solve the forest fire problem, the greatest source of timber waste. Another survey made by C. M. Granger will determine the amount of available timber, the rate of depletion and the rate of growth.

Legislation passed by the state of Wisconsin during the session ending June 27 also will assist the situation. The amount available for reforestation and forest fire fighting by the Wisconsin Conservation Commission will be increased materially. A law also has been passed requiring that slash from logging operations be removed or burned within 50 feet of every highway, forest preserve, or stand of valuable timber. The slash now covers 540,000 acres in northern Wisconsin and is the most prolific source of fires. Only about 400,000 acres of virgin timber stands in Wisconsin and will be used up in 15 or 20 years.

Cornerstone Laid for New Institute

One of the important June events was the laying of the cornerstone of the Institute of Paper Chemistry at Lawrence College, Appleton. The new building is taking shape rapidly and will be ready for occupancy when the fall college term opens.

This is a co-operative project of the paper manufacturers of Wisconsin and quite a number were present. Mortar for the cornerstone was spread by Ernest Mahler, president of the board of trustees of the institute, and vice-president of the Kimberly-Clark Corporation. The principal address was made by Dr. Julius Klein, assistant secretary of commerce of the United States, and the building was accepted for the paper industry by Jesse H. Neal, general manager of the American Paper and Pulp Association. Dr. Klein praised a "fact finding" institution such as this, which at the same time removes from business the overburden of tradition. The cornerstone was characterized by Mr. Neal as the cornerstone of the present and future success of the paper industry, based on the fact that the institute will turn trained experts into the field, who will guide its development.

The institute graduated its first ten students at the same time, and all of these as well as the visitors and participants in the stone laying ceremonies were guests at a banquet given in the evening at the North Shore Country club. Gov. Philip F. LaFollette, of Wisconsin, was the speaker and expressed his praise of an institution of this kind, where all branches of the industry joined in work for their fundamental good.

Graduates and the schools from which they came are: Edward Amstutz, Wooster College; Harold Bialkowsky, Massachusetts Institute of Technology; Richard Crain, Wooster College; Wilbur Cassiday, University of Iowa; Leon Foreman, University of Illinois; Harry Irwin, Simpson College; Edwin Laughlin, Ohio Wesleyan; Carl Schroeder, DePauw University; Carl Buff, Elmhurst College, and Roy Davis, Bates College.

Papermaking Study Course Being Prepared

Material for a course of study that will be utilized by the federal department of vocational education and by the Technical Association of the Pulp and Paper Industry is being prepared by the educational committee of Tappi, of which H. G. Noyes, of Appleton, Wis., is chairman.

Wisconsin, under the direction of Mr. Noyes as director of pulp and papermaking education for the Wisconsin Board of Vocational Education, has perhaps the most advanced methods for educating paper mill employees and the major part of the outline will be based on this experience. The committee operates on the premise that training is a part of production; that its primary job is to educate the rank and file of the paper industry to the fact that they need education.

Outlines were prepared at a recent meeting of the committee in Washington, D. C. and material for the courses will now be sought in mills of various types throughout the country. Production, power, maintenance and service will be the major divisions. As soon as study material is in shape for use, it will be disseminated through divisional and state leaders with a view to its general adoption on all mills.

Approval is being sought by the Nekoosa-Edwards Paper Co. of the large impounding dam built on Four Mile Creek several years ago. The company built the dam so as to impound water for Nepco lake, from which the mills at Nekoosa and Port Edwards are supplied. It does not furnish water power, and the company therefore did not believe it necessary to submit to the "recapture clause" of the Wisconsin water power law, under which the dam would revert

to the state in 30 years. The Wisconsin Railroad commission held that the recapture clause should apply, and the decision was upheld by all of the courts, including the United States supreme court. The company is now willing to come under the recapture law and wants construction of the dam approved.

The death is announced of Arthur Thomas Brown, treasurer and general manager of the Nicolet Paper Co., DePere, Wis. The end came June 19 at his home at DePere after an illness of several months ending up in complications. Mr. Brown formerly was employed by the Kimberly-Clark Corporation at Niagara, Wis., and by the Rhinelander Paper Co. He enjoyed rapid promotion in the Nicolet organization and was made general manager when a re-organization took place last year.

George B. Maurer, former superintendent of the Island Paper Co., Menasha, died recently at Marinette. He had been employed as superintendent of the International Power and Paper Company's mill at Oconto Falls, and later was transferred to the Marinette branch. He was 68 years old.

Safety records of the Interlake Pulp and Paper Co., Appleton, continue to make history. The mill now has 16 months to its credit without a lost time accident. Another of the Consolidated Water Power & Paper Company's mills located at Stevens Point also is enjoying a growing record, with no lost time accident since Aug. 3, 1930.

Six rafts of pulpwood will be towed across Lake Superior this season by the Consolidated Water Power & Paper Co. from Nippigon Straits, Canada. The first one, 12,000 cords valued at more than $100,000, has reached Ashland, Wis., where a crew of 50 men will be employed to reload the wood on freight cars.

Kenneth Lawson, who has been conducting a business at Menasha, in the manufacture of paper roll plugs, has filed a petition in bankruptcy. He lists liabilities of $54,995 and assets of $23,655, of which he claims $14,684 as exempt.

Inheritance taxes of $287,052.47 paid on the estate of George A. Whiting, late paper manufacturer of Neenah, are the largest ever paid to Winnebago county. The estate exceeded $4,000,000, with his widow and son, Frank B. Whiting, as the principal benefactors.

More and more ocean shipments of materials are being conveyed right through the Great Lakes by ocean steamers to Wisconsin mills. One thousand tons of Swedish pulp from a mill near Stockholm was brought to the docks at Milwaukee for the Hummel & Downing Co., of that city. A cargo of 420 tons of China clay also arrived direct from Norway at Milwaukee for the Appleton Coated Paper Co., of Appleton.

George W. Mead, president of the Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., was elected president recently of the League of Wisconsin Municipalities, made up of city officials. Mr. Mead is mayor of Wisconsin Rapids.

Old age pensions have been adopted by the Gilbert Paper Co., Menasha, Wis. Employees who have been with the company not less than ten years are retired at 70 years with 40 per cent of the pay they were receiving at the time. Those who have worked 40 years or more have the privilege of retiring on the 40 per cent basis even though they may not have reached 70.

The new federal forest nursery at Rhinelander, has gotten under way with the planting of 442 beds of eastern white pine and Norway pine. A total of 2,210,000 trees will be planted this year and the plans are so worked out that 10,000,000 trees will be available each year for transplanting in the future.

The Wisconsin Rapids Safety Council has re-elected J. J. Plzak as its chairman. Mr. Plzak is in charge of safety work at the Consolidated Water Power & Paper Co.

Manufacture of printing inks has been started by the A. R. Timberman Corporation in a plant established at Menasha. This will be the main plant, with H. M. Canfield as manager. The offices and a branch plant will still be maintained in Milwaukee.

❖ OHIO ❖

New Paper Corporation

A company has been formed at Avery, near Norwalk, to operate a paper mill in the plant formerly occupied by a company manufacturing potato digging machines. The incorporators of the company are: Congressman James T. Begg, now of Cleveland; C. L. Hoag, M. L. Rankin, and Joseph H. Salisburg, the latter of Sandusky.

The main building of the plant is 45 by 500 feet and another building 55 by 165 feet is included. There is an excellent water supply. The product will be sold through the sales organization of the American Crayon Co. of Sandusky.

It is proposed to install a machine for making paper 100 inches wide and 15,000,000 pounds yearly. Messrs. Hoag and Rankin have long been associated with the paper and Textile Machine Co. of Sandusky.

The new company will be called the Avery Paper Corporation, and has a capital of 6,000 shares of no par stock and $100,000 preferred stock.

Forrest Hilsheimer, a foreman in the plant of the Mead Corp., Chillicothe, Ohio, has secured a patent for an inlet for papermaking machines. This stock inlet is designed for use with a fourdrinier paper machine.

Engineer Addresses Superintendents

The Miami Valley Division of The American Pulp & Paper Mill Superintendents Association held a dinner meeting at the Hotel Machester in Middletown, Ohio, Saturday evening, June 20.

B. M. Baxter, well-known consulting engineer delivered a paper on "An Engineer's Ideas on Beaters." The next meeting will be held in September, the exact date and place to be annunced later.

Goulds Pumps Announce Organization Changes

H. W. Foulds, assistant to the president, and general sales manager of Goulds Pumps, Inc., Seneca Falls, N. Y., recently announced several changes in the headquarters and branch office staffs of the company.

Effective May 1, Henry L. Boyer was appointed manager of Farm-Suburban Sales; Henry F. Miller, manager of Industrial Sales; W. G. Allen, manager of Engineering Sales; J. B. Anderson, in charge of the "Department of Inquiry and Estimate," and G. W. Cramer, Advertising Manager.

The following appointments in branch house organizations have also been made; Mark D. Rowe, formerly Eastern Manager, Servel Sales, Inc., now manager of New York office; J. B. Foley, formerly manager of Goulds Pittsburg office, now manager of Chicago office, and Fred Jones, formerly connected with Goulds Philadelphia office, now manager of Pittsburg office.

To better serve pump users in the Southwest, the company has opened a new branch office at Dallas, Texas, 417 Magnolia Bldg., Fred Hayes, manager. This is in addition to offices maintained in Houston and Tulsa.

PACIFIC COAST

WASHINGTON

New Plant to Manufacture Roofing Felt and Paper

The Superior Felt and Paper Co., Seattle, recently organized with Ray E. Stanley as president, has purchased a tract of land on Salmon Bay at Twenty-eighth avenue, N. W. where a new mill will be operated for the manufacture of roofing felt, roofing papers, wallboard and similar products.

Construction will start this month representing an investment of over $200,000. The daily capacity will be 20 tons of paper, ten tons of roofing felt and about 30 tons of wallboard and boxboard.

The company is capitalized at $400,000 with seven per cent preferred stock with $100 par value and 5,000 shares of no par common. Mr. Stanley will be in active charge of construction. Other officers of the company already named include: I. Schuman, Seattle, vice-president; C. B. Batchelder, secretary, and S. Glant, treasurer.

Timber Interests Merge

Potlatch Forests, Inc., was formed last month by a merger of several timber interests in the northwest, with J. Philip Weyerhauser, Jr., as president. The merged firms include the Clearwater Timber Co., the Edward Rutledge Timber Co. and the Potlatch Lumber Co.

While no indication was given that this corporation would embrace the pulp industry in its activities at present, the merger excited more than casual interest in the pulp and paper field since the Weyerhauser interests are already launched in pulp manufacture with the building of the new mill at Longview.

A long list of names allied with the merged companies and their family and business relations is connected with the new merger. A total of $20,000,000 is said to be involved in the transaction.

Plead for Use of Western Pulpwood

Ossian Anderson, president of the Puget Sound Pulp & Timber Co., Everett, was the only Pacific coast representative at the meeting of the federal timber conservation board at Washington, D. C., June 11 and 12. Report is that Mr. Anderson presented the case for the northwest in a concise and forceful manner.

Pointing out that in the northwest states and California alone there is an annual waste of 5,000,000 cords of usable pulpwood, which gives some indication of why the timber industries are not more than 50 per cent developed and operating in this section, Mr. Anderson made a strong plea for protection of these possible developments through denying foreign importations of these products.

George Cropper, formerly with the Washingtan Pulp & Paper Co., Port Angeles, has now become associated with the Olympic Forest Products Co. in that place as production manager. This plant has a capacity of 175 tons of bleached sulphite pulp.

The Puget Sound Pulp & Timber Co., Everett, closed its camp and mill at Clear Lake, July 1, for an indefinite period.

O. A. Cauvel, formerly head chemist of the Washington Pulp & Paper Co. at Port Angeles, is now superintendent.

Work on Weyerhauser Plant Being Rushed

Construction of the 150-ton bleached sulphite mill of the Weyerhauser Timber Co. at Longview continues to be the major new activity in the northwest pulp industry. With the five concrete units of the new mill practically completed machinery is arriving and the finishing work rushed to a finish by Chris Kupplers' Sons, who are in charge of the work. O. C. Schoenwerk designed the plant.

The water reservoir and filtering plant is constructed to treat the water by latest scientific processes approved by state health officials and through this waste, liquors will be diverted before being poured into the river.

The vacuum digesters are being installed by the Willamette Iron & Steel Co., Portland. The pulp produced in the plant will be shipped east for manufacture of fine paper.

CALIFORNIA

H. A. Swafford, formerly mill manager of the Crown-Willamette Paper Company's plant at Floriston which was recently dismantled because of unsatisfactory litigation regarding stream pollution, is now associated with the company in Los Angeles, devoting himself to sales efforts at present. W. R. McHaffie is resident manager of the Los Angeles plant which is chiefly concerned with making fruit and vegetable wraps.

Leadbetter Makes Report

Frederick W. Leadbetter, president of the Columbia River Paper Co. and its allied companies, has reported to stockholders on the first quarter's earnings ending March 31, 1931. A reasonable volume of production was maintained by the plants which include the Oregon Pulp & Paper Co., Salem; the Columbia River Paper Mills at Vancouver, Wash.; the Columbia River Paper Co. of Florida, and the California-Oregon Paper Mills at Los Angeles, and the first quarters earnings of the Columbia River Paper Co. in 1931 exceeded considerably those of the same period in 1930.

A rigid policy of economy in production was initiated in these plants this year, including reduction in wages and salaries through the entire organization and careful buying and use of raw materials.

In 1930, the Columbia River Paper Mills at Vancouver paid $60,000 dividends on preferred stock and the Oregon Pulp & Paper Co. paid $64,000 in dividends.

The Pioneer Paper Co., Los Angeles, which is now off to a good start in the manufacture of roofing paper, invested about $50,000 in machinery and facilities for manufacturing this new line which is already reaching an active market. The roofing product is only one of the products of this company which also makes building papers and similar heavy types. More than 200 are employed at this plant at full production.

E. W. Buckley, president of the Buckley-Lynch Paper Co., has bought the interest of C. N. Lynch whose position was that of secretary-treasurer. Mr. Lynch has returned to his former home in Chicago and his place has been taken in the Buckley-Lynch Co. by R. S. Jones who has previously been an associate of Mr. Buckley, when they operated as the Western Pacific Paper Co.

Charles Culp, formerly with specialty paper lines in the East, has joined the Zellerbach Co. as manager of its recently added specialty department in the Los Angeles division.

Howard L. Stillwell, managing director of the Export Fiberboard Case association which was recently organized in San Francisco, is on a European trip in the interest of the use of fiberboard for shipping purposes. He will investigate shipping conditions and present the case of the fiberboard manufacturers. He carried with him a good supply of the booklet published by the association which he expected to give wide distribution. This is titled "Suggestions for the Proper Handling of Export Fiberboard Cases."

W. R. Howard, vice-president and general manager of the Howard Paper Co., Urbana, Ohio, spent sometime on the

west coast visiting the branches of Blake, Moffitt & Towne which will hereafter act as distributors for the lines of the Howard Paper Co.

The General Paper Co., Los Angeles, is showing a new line of book papers in white and colors manufactured by the Jessup & Moore Paper Company, Philadelphia.

OREGON

Propose Tannic Acid Plant for Portland

A plant which would be designed to use wood wastes of northwest paper mills in the manufacture of tannic acid, is reported to be under consideration for Portland. The first unit would cost approximately $150,000 and would employ about 200 men at the start according to preliminary estimate.

Willis E. Straight, forestry expert and timber estimator, spent sometime in the city last month looking over possible sites for the plant as a representative of eastern interests.

The location suggested as most favorable by city officials and industrial specialists is in the peninsula district along the Columbia slough where both water and rail facilities are available. Furthermore, this location is midway between the huge mills of the Crown-Willamette Company at Camas, Wash., and the paper mills at St. Helens and Oregon City, Ore.

Hemlock bark, which has been a problem and expense to the paper mills, would be utilized by the tannic acid factory as it would use all the bark from hemlock logs.

The peninsula site mentioned would later have the advantage of a channel through to the Willamette river, it was pointed out to Mr. Straight as well as a belt line to serve factory sites thus making direct connection with the harbor in Portland.

Not only paper mills but the entire lumber industry is taking interest in this indication of a new plant as it would greatly stimulate the use of hemlock lumber should a market for the bark develop.

New Machine at St. Helens Increases Production

The St. Helens Pulp & Paper Company now has its new machine broken in and has taken on 75 additional employees, bringing the number now employed to 425.

The new machine is the latest type Beloit lightweight pick-up capable of manufacturing grades from tissue to 50 pound weight. At present fruit wraps and other lightweight products will be manufactured. The machine is 160 feet long and 202 inches in width. The company added 75,000 square feet of floor space to provide for the installation and operation, which will increase production and capacity one-third.

Irving T. Rau, secretary-treasurer of the company, pointed out that the range of products now made possible with this new machine, will be a great stimulant to the sales program. The company feels that the set-up is now adequate for its requirements for sometime.

The St. Helens Pulp & Paper Co. was established in 1926 and has progressed favorably. Max Oberdorfer is president and general manager and H. F. McCormick is chairman of the board of directors.

Ernest Schweitz, who has been previously identified with the company, has become assistant manager of the Spaulding Pulp & Paper Company's plant at Newberg of which C. F. Beyerl recently became manager. New equipment is to be installed at this plant, financed by the recent bond issue of $300,000 which President Chas. K. Spaulding announced in May for that purpose. The capacity of the plant is 75 tons of unbleached sulphite pulp daily.

The Oregon Pulp & Paper Company acted as host to delegates who were in attendance at the State Editorial Association Convention the last week in June. The company has just recently converted a machine for the manufacture of glassine products which increases the program of operation here. This is an old machine of the cylinder type which has been modernized to its present purpose and now adequately fills its requirements.

Notice of T.A.P.P.I. Fall Meeting

The fall meeting of the Technical Association of the Pulp and Paper Industry will be held in Kalamazoo, Michigan, September 24 to 26, 1931. A list of the committees and all details that are thus far available will be found in the Michigan News Section of this issue.

Fulton Iron Works Merged with Whiting Subsidiary

Announcement has just been made that the Fulton Iron Works, St. Louis, Mo., manufacturers of machinery, has entered into a contract to merge with the Goslin-Birmingham Manufacturing Co., of Birmingham, Ala. The contract is subject to acceptance by the Fulton stockholders.

The Whiting Corporation, Harvey, Ill., with which Goslin-Birmingham Co. is associated, will furnish additional working capital and control the new company through stock ownership. The combined invested capital of the new company is about $10,000,000.

Geo. H. Spencer Joins Staff of E. D. Jones & Sons

The E. D. Jones & Sons Co., Pittsfield, Mass., has announced that George H. Spencer, formerly sales manager of the Minton Vacuum Dryer Corp., has joined its sales staff.

Following graduation in 1919, as a mechanical engineer from Stevens Institute of Technology, Mr. Spencer has been successfully engaged as plant analyst for Goodyear Tire and Rubber Co.; charge of pulp and paper department of SKF Industries, Inc.; and sales manager of Minton Vacuum Dryer Corp.

Mr. Spencer's fast growing list of friends in the paper industry wish him much success and happiness in his new connection.

Harold Clark of Link-Belt Retires

After having been in the service of Link-Belt Company for 30 years, Harold H. Clark retires from his position as vice-president and assistant secretary of the Pacific Division of the company.

Announcement is made from the general offices of the company in Chicago, that Mr. Clark will be succeeded by Ralph M. Hoffman, for eight years manager of the Seattle office of the Pacific Division of the company. Mr. Hoffman's headquarters will be in San Francisco.

The factory of the American Paper Machinery and Engineering Works, Glens Falls, N. Y., is again busy with a good supply of orders. March of this year was the company's best month since starting in business; extra help was added and the plant was operated overtime. Since then the APMEW factory has operated on a full-time schedule. They are again taking on extra help and running overtime.

Hungerford & Terry, Inc., Clayton, N. J., announce that D. R. Weeden, who has been connected with their Boston office for four years, has severed his connection. H. R. Myers, for the past six years chief engineer of the company, has taken charge of the New England territory.

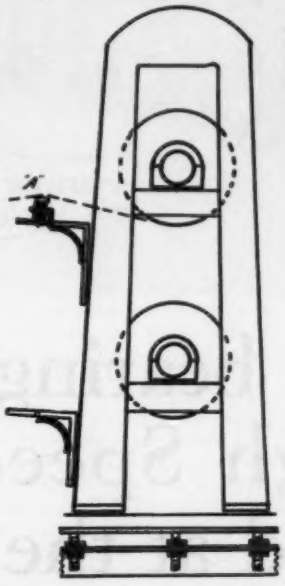
H. R. Bowers, formerly with The Bailey Meter Company, is now manager of sales and advertising for The Meriam Company, Cleveland, Ohio, manufacturers of flow meters.

Philip S. Rinaldo, president of Flexible Steel Lacing Company, Chicago, passed away at his home in Chicago on May 30, 1931.

Practical Helps for the Mill Man

Spreader for Stack Reel

THE spreader close to the reel on Pope reels and the spreader on an English reel tend to help making a reel especially eliminating some of the waste on a start of the reel or on a break. It has been found easy to put a spreader on a stack reel as is shown in the sketch. Brackets are attached at suitable heights and a simple spreader can be transferred from one to the other as the reel is changed. This spreader is made of an angle iron with flat iron for the spreader proper. Screws at 12 or 15 inch intervals attached to the angle iron through holes and secured by lock nuts will serve to give the necessary bow or crown to the spreader.

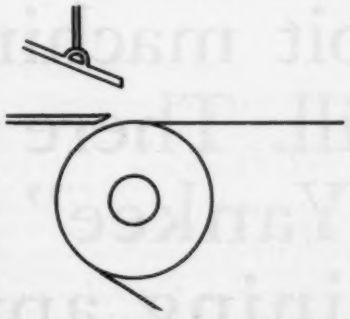


Size of Wire Return Rolls

A PAPER mill engineer claims that even when the width of the machine does not demand large diameter return rolls on the wire part they are an advantage in other ways. The idea is that the radius of the arc in which the wire is bent is controlled by the size of the rolls and the greater the arc on which the wire is bent the less the strain on the wire. Moreover, the wire once started, the larger the rolls the less it takes to keep them going. Mills with narrow machines when considering replacements would be well advised to consider large wires.

Better Formation

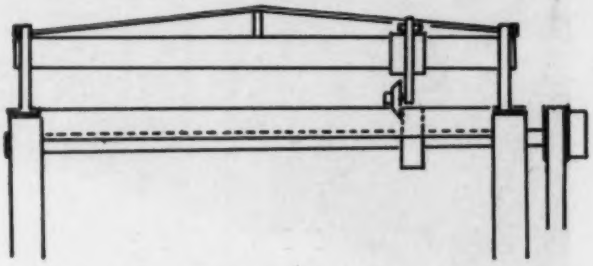
A NUMBER of superintendents are agreed that it is better to have the top lip of a modern stock outlet set about ½ inch or ⅝ inch ahead of the apron board or bottom lip. This is shown roughly in the accompanying sketch. In one mill where this was done on one machine before the other had been changed, it was possible to see clearly that the projecting upper lip delivered a much better sheet, and the spatter that often comes with high speed was entirely eliminated.



Frank K. Billett, for the past eight years head of the cost accounting department, has recently been appointed secretary of the Toledo Scale Company, Toledo, Ohio. Mr. Billett has been connected with the company for over ten years. He joined the organization in 1920 as enameling room clerk, and since that date has advanced to his present position.

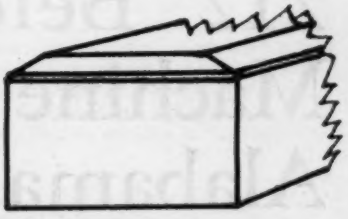
Slitter Bar Support

ON some of the older machines a tendency to speed up has necessitated speeding up the winder. This brings about a certain amount of vibration which was not foreseen when the winder was built. The sketch shows a suggestion for a brace to run from one side of the winder to the other with a post in the middle and at each end for tightening.



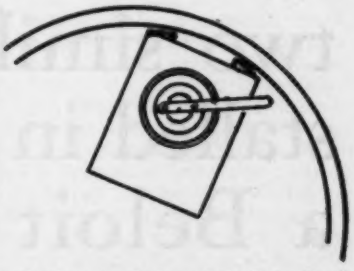
Bevel on Suction Box Cover

ONE paper mill superintendent likes to bevel the edges of his suction box covers as shown in the sketch. He believes that there is no use for the wood often left on both sides of the holes, feeling that this is an extra wear on the wires. He also believes that the bevel keeps the wire seam from pounding on the edge of the cover and so helps to relieve the strain on the wires.



Suction Roll Adjustment

ON some of the older installations of suction rolls the little wheels for adjusting the seal are very small. It is a simple matter to attach a small bar to the smaller one, as shown in the sketch, and so avoid the necessity of looking about for a wrench. A similar bar with a V-bend in it could also be attached to the other wheel.

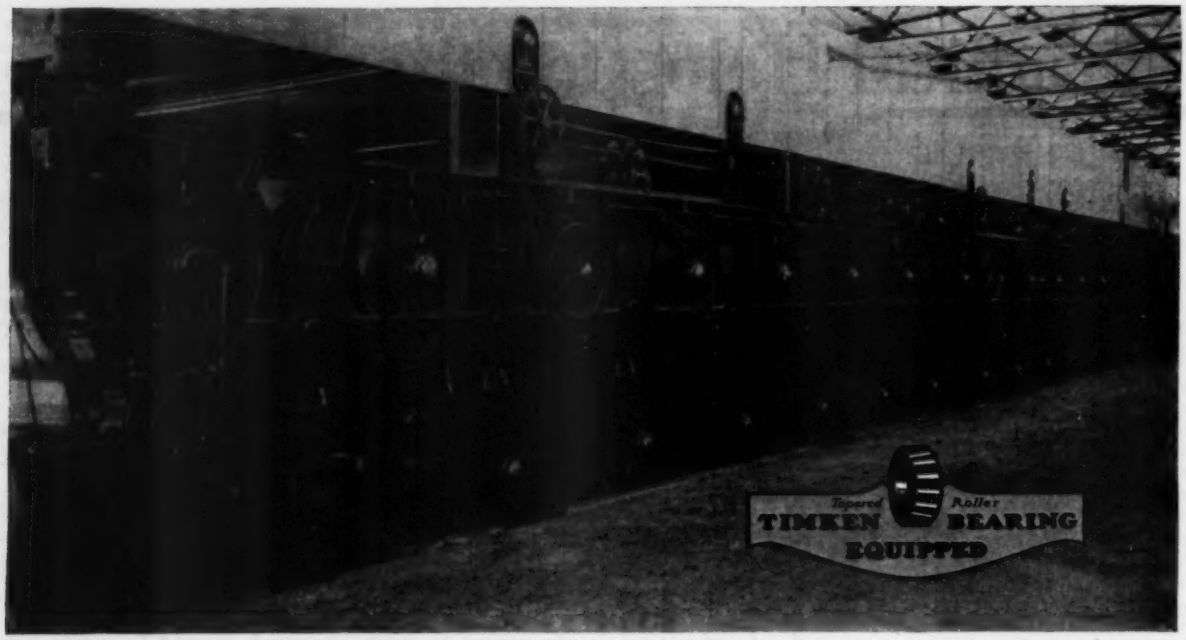


Bogalusa's New Machine Operating

A new kraft manufacturing unit recently started operation at the Bogalusa Paper Company, Bogalusa, La., which marks the completion of an expansion program inaugurated about a year ago. A new fourdrinier machine, making a sheet 144 inches wide will increase the output of the paper plant by 50 tons a day, according to M. E. Cody, manager.

The new addition, built to house the additional machine, is a daylight building, with a special system of lighting.

A new corrugating machine recently was installed in the Bogalusa plant.



Timken has 997 bearings in this 212" Beloit High Speed Kraft Machine installed at the Mobile, Alabama, plant of the Southern Kraft Corporation. It is one of two similar Beloit machines installed in this mill. There is also a Beloit 174" "Yankee" Kraft Machine containing approximately 600 Timken Bearings.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Canadian News

Several Paper Items Included in New Canadian Tariff

The latest Canadian budget, presented to the Canadian Parliament by Premier Bennett early last month, is wide in its range and likely to prove far-reaching in its results. Its keynote is "Canada First," the British Empire second, and after that, a long way after, the rest of the world.

The chief items of direct or indirect interest to the paper industry and trade on which duty has been placed or increased are: pictorial post cards, greeting cards and similar artistic cards or folders; periodical publications, in the English or the French language, consisting of magazines or fiction, unbound or paperbound (15 cents per pound); tarred paper and prepared roofings, including shingles, fiberboard, strawboard, sheathing and insulation), manufactured wholly or in part of vegetable fibers, N.O.P.; sandpaper, glass or flintpaper, and emery paper or emery cloth; paperhanging or wallpapers, including borders or bordering; regenerated cellulose in sheets, not printed; regenerated cellulose and manufactures thereof. As regards magazines and periodicals, it is provided that the Governor-In-Council may from time to time exempt from the duties specified in this item such of the periodical literature referred to as may be deemed to be of a religious, educational or scientific character.

This is one of the most talked of items of the new tariff. It seems to be the prevailing opinion that it is aimed more at the extensive advertisement of American-made goods carried in a few American publications with large Canadian circulations rather than at the publications themselves, as these advertisements are in some quarters considered to contribute in no small measure to the large Canadian consumption of certain lines of American-made products. It is considered that the new tariff may prove even more embarrassing to Canadian news dealers than to the American publishers. There is talk of some of the latter printing their Canadian circulation in Canada, most likely in Toronto, but no definite information in this connection is forthcoming. The exact effect of the new duty cannot yet be gauged, as it comes into effect only on July 1. Meanwhile, latest reports from Ottawa indicate a possible modification of this item; but this may be merely a wider application of the exemption clause than was at first understood to be the intention of the those who drafted the new tariff.

Mill's Newsprint Output Expanded

The 1930 annual report of International Power and Paper Co. of Newfoundland, Ltd., recently made public, describes the improvement in operating efficiency at the company's Corner Brook newsprint mill and the expansion of its Deer Lake hydroelectric plant to 156,000 hp.

Output of paper from the mill's four newsprint machines averaged 515 tons a day in 1930 as compared with 483 tons a day in 1929, while in the month of February of this year it rose to an average of 546 tons per 24 hours. In addition to these increases on the four newsprint machines, the wrapper machine at the mill has been adapted for the manufacture of newsprint when not in use for the manufacture of wrappers, with a consequent increase in the 1930 daily average output to 540 tons a day, and the attainment in February of this year of an average output for the mill of 593 tons a day. The steady increases in output have been accompanied by material reductions in operating costs.

The installation of an additional 58,000 hp. at the Deer Lake power plant was made at the exceptionally low capital cost of $28.15 per horsepower and has resulted in a substantial increase in the company's earning power. The additional capacity has made possible the elimination of all but a small part of the fuel bill at Corner Brook, as the Deer Lake plant supplies the mill with sufficient current, not only for power, but also for the generation, through the use of electric boilers, of practically all the steam requirements of the mill. This advantage, so far as is known, is enjoyed by no other newsprint mill.

During the year the company acquired a few additional tracts of timber which were desirable in rounding out areas already controlled. Timber holdings now consist of over 1,500 square miles of freehold and over 5,600 square miles held under Crown licenses, a total of over 7,100 square miles, which have an estimated stand of over 13,400,000 cords of pulpwood. The Crown timber licenses, with minor exceptions, are for a 99-year term, of which only a little more than three years have elapsed. Due to climatic and other local conditions the expenses of fire prevention work is at a minimum and losses from fire are negligible. Pulpwood costs at the mill are unusually low as a large portion of the timber is located in the watershed of the Humber river and wood on other holdings is accessible by rail or water.

Even allowing for the deductions in connection with the recently announced newsprint price cut, earnings for the first four months of 1931 will be but little below the figures for the corresponding period in 1930, as the decrease in selling price is approximately offset by the continuing improvement in operating efficiency and the benefits of the additional hydroelectric generating capacity installed last year.

The 1930 report of the company shows net earnings available for interest and reserves of $3,073,596, as compared with $3,255,645 for 1929. After deducting the amounts set aside for depreciation and depletion, the balance for 1930 amounted to $2,336,042, more than nine and a half times the amount required for interest on the company's first mortgage bonds, and approximately one and a half times the total interest requirements on the entire fixed and current indebtedness of the company. The balance added to surplus in 1930 after all deductions was $764,641.

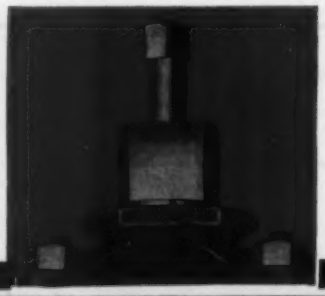
Newsprint Situation

The conditions in the Canadian paper industry are becoming critical at several points. Difficulties in the rearrangement and simplification of the financial structure of the Canada Power and Paper Corp. brings this company on the brink of liquidation. The failure of this plan would result in further disruption of the newsprint market and would also affect the financial valuation and standing of the other Canadian newsprint producers. Unless the plan for reorganization of Canada Power goes into effect, the organization must be broken up and the various mills revert to the bondholders. There has been some talk of the preferred stockholders of the Belgo-Canadian Paper Co. withdrawing from the Canada Power and Paper organization; but this has been denied by some of the important stockholders such as John Stadler.

Production in the Canadian mills during the month of May was slightly lower than the previous month, being at the rate of 63 per cent of capacity, as compared with 64 per cent in April and 75.2 per cent in May 1930. The actual output in May was 202,607 tons, as compared with 205,838 in April. During the first five months of this year, the production has been 128,123 tons less than in the same period of 1930, or 12 per cent lower. Total exports of pulp and paper during May were valued at $12,786,114, an increase of $2,014,662 over April of this year, but a decrease of $3,938,967 from May 1930.

But while the paper mills of Canada are operating at only two-thirds of capacity, those in Newfoundland are producing at about 91 per cent of their rated capacity. For the first four months of the present year, some 95,000 tons of paper were turned out, an average of nearly 25,000 tons a month, which is a new record for Newfoundland mills.

The Perfect Application of a Principle



This screw controls a multitude of VALVE PROBLEMS

Seven 6" Nordstrom Valves used in an Ohio paper mill making tissue.

Turn down the screw to lift the plug

Cut-away view of Nordstrom Valve showing patented "Sealdport" method of lubrication which resists leaks. The most satisfactory solution of your valve problems.

Turn down the screw of a Nordstrom Valve and you have stopped your valve troubles. For this simple operation works wonders! The plug is lifted by hydraulic pressure, thus separating the seating surfaces so that a uniform distribution of special "Merco" lubricant is obtained. Once distributed, the lubricant makes the valve leak-resistant, easy to turn and protects the metal surfaces against wear.

Tell us your valve troubles and we'll show you how they can be corrected. In the meantime, just say "Send me your latest Catalog."

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MERCO NORDSTROM VALVE COMPANY
SUBSIDIARY OF THE MERRILL COMPANY . . ENGINEERS

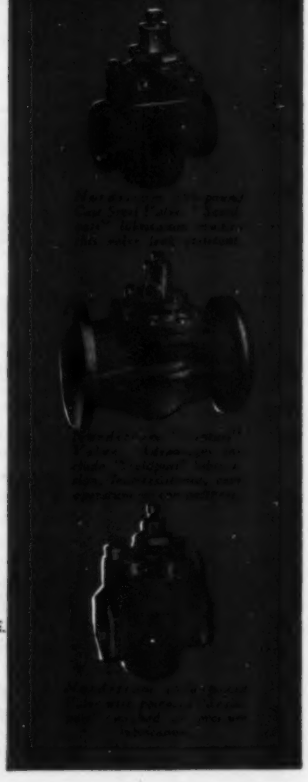
Atlanta - Healey Bldg.
Boston - 263 Stuart St.
Buffalo - 1.W. Genesee St.
Charleston - W. Virginia
Chicago - 176 W. Adams St.
Dallas - Magnolia Bldg.
Detroit - 2842 West Grand Blvd.
El Paso - 111 So. Virginia St.
Houston - Petroleum Bldg.
Los Angeles - 1709 West 8th St.
New Orleans - Masonic Bldg.
New York - 11 W. 42nd St.
Pittsburgh - Clark Bldg.
St. Louis - 317 N. Eleventh St.
San Francisco - 343 Sansome St.

Agencies:

Denver - Republic Supply Company, 332 Continental Oil Bldg.
Honolulu - W. A. Ramsay Co., Ltd., Fort & Queen Streets
Philadelphia - Brown, Wilson & Company, 1600 Arch St.
Saginaw - Arthur C. Seckert, 113 Durand St.
Salt Lake City - National Equipment Co., 101 West 2nd South St.
Tulsa - B.V. Emery & Company, 216 E. Brady Street

Factory - Oakland, Calif.

Canada - Peacock Bros., Ltd., Montreal, Toronto, Winnipeg, Vancouver. (Also Sydney, N.S.)
England - Audley Engineering Co., Ltd., Newport, Shropshire.
Buenos Aires, Argentine, - General Electric, Soc. Anon., Victoria 615Jiaq. Peru.



The New Zealand Government has decided to withdraw the British preference previously accorded Canadian goods, and as a result has virtually closed the market for Canadian wrapping paper and for several grades of sulphite paper, an exception being newsprint. The situation directly affects paper mills operating in British Columbia, notably Pacific Mills, Ltd., at Ocean Falls, a subsidiary of Crown-Zellerbach Corp., and Westminster Paper Mills, of New Westminster.

A. M. Koroleff, secretary-forester of the Woodlands Section of the Canadian Pulp and Paper Association, accompanied by Professor Scarth and W. A. Delahey, had a meeting in Ottawa last month with Dr. Tory, chief of the National Research Council of Canada. The purpose of the meeting was to endeavor to interest the Council in conducting research studies in connection with the forestry operations of the pulp and paper industry. It is hoped that, as a result of this meeting, the money necessary for such important research work will be forthcoming.

C. R. Van de Carr, Jr., vice-president of Mead Corp., Dayton, Ohio, has been elected to the board of Directors. Mr. Van de Carr was connected for a number of years with the Laurentide Co., the Ste. Anne Division of Abitibi Power and Paper, and the Fraser Companies.

❖ QUEBEC ❖

Canada P. and P. Reorganization Plan Announced

By far the most important development in the pulp and paper industry last month was the announcement of the long-awaited plan of reorganization of the Canada Power and Paper Corp., completing one of the most complex and far-reaching tasks ever undertaken in connection with corporate finance in this country. It is the work of the Securities Protective Committee of the Corporation, under the chairmanship of Hon. Charles A. Dunning. Apart from the 20,000 to 25,000 holders of securities of the corporation and its constituent companies, a broad interest centers in the situation because in a successful cleaning up of that organization's present difficulties is envisaged a most constructive step in the rehabilitation of the newsprint industry as a whole. The plan concerns holders of the securities and shares of the Canada Power and Paper Corp. and the following constituent companies of the corporation: Anticosti Corporation, Belgo-Canadian Paper Co., Port Alfred Pulp and Paper Corp., St. Maurice Valley Corp., and Wayagamack Pulp and Paper Co., but does not include Anglo-Canadian, which company is not included in the scheme proposed by the committee but reverts to its former ownership.

Briefly, the plan calls for the formation of a new company, with a capitalization of first mortgage bonds (including first mortgage sterling debenture stock) and one class of shares, which will take over the undertakings and assets of the above-named companies. The new bonds and debenture stock will be on an income basis for five years and the new securities will be made available for exchange for the existing securities on a basis set forth hereunder. No new money is being asked for. Authorized capitalization of the new company will, under the plan, consist of $100,000,000 first mortgage bonds, including first mortgage sterling debenture stock, and 2,000,000 shares without par value. Of the bonds $65,000,000 will be authorized for immediate issue as 30-year 5½ per cent bonds and sterling debenture stock, which will be on an income basis for five years, but will bear fixed interest thereafter. According to the report of the committee, the scale of distribution of the new securities has been based, not only upon a careful analysis of the assets and earning power represented by each existing security, but upon such other important factors as inter-company obligations (including leases), the effects of separation upon operating costs, existing newsprint contracts, and the advantages of maintaining a well-established selling organization.

The distribution scheme is as follows:

Belgo bondholders receive $125 of new first mortgage bonds and one share of news stock for each $100 of present bonds.

Belgo preferred shareholders receive three shares of new stock for each present preferred share.

Wayagamack Pulp and Paper first mortgage shareholders receive $125 of new first mortgage bonds and one share of new stock for each $100 of present bonds.

Port Alfred bondholders receive $100 of new first mortgage bonds and one share of new stock for each $100 of present bonds.

Port Alfred first mortgage registered debenture stockholders receive 20 pounds of new first mortgage sterling debenture stock and one share of new stock for each 20 pounds of present first mortgage registered debenture stock.

Port Alfred preferred shareholders receive one and one-half shares of new stock for each present preferred share.

St. Maurice bondholders receive $100 of new first mortgage bonds and one share of new stock for each $100 of present bonds, series A or B.

St. Maurice first mortgage registered debenture stockholders receive 20 pounds of new first mortgage sterling debenture stock and one share of new stock for each 20 pounds of present first mortgage registered debenture stock.

St. Maurice preferred shareholders receive one and one-half shares of new stock for each $100 or for each 20 shares of $5 (one pound) each of present preferred stock.

Anticosti bondholders receive $100 of new first mortgage bonds and one share of new stock for each $100 of present bonds.

Anticosti preferred shareholders receive one and one-half shares of new stock for each present preferred share.

Canada Power and Paper debenture holders receive $15 of new first mortgage bonds and one and one-half shares of new stock for each $100 of present debentures, Laurentide or Wayagamack series.

Canada Power and Paper shareholders receive one share of new stock for each ten present shares.

Provision is made in the plan so that the odd common shares of Belgo, Port Alfred, St. Maurice and Wayagamack, outstanding in the hands of the public, may be exchanged for new shares.

The estimated capitalization of the new company will be $52,627,596 bonds and 1,547,141 no par value shares, as compared with a present set-up (exclusive of Anglo-Canadian) of $44,365,565 bonds, $35,466,700 debentures and $24,000,000 preferred stock (a total of $103,832,266) and 1,521,750 no par value shares.

The committee, recognizing that holders of securities who forego fixed charges for five years will expect assurance as to management, especially during the period during which their right to receive interest depends on earnings and current assets, provide in the plant that the committee will nominate a majority of the new board of directors to serve for five years, the period during which the new bonds will be on an earnings basis.

While the plan has been greeted with much favorable comment, it is by no means unanimous. The security holders of Belgo Canadian, in particular, do not seem satisfied with the treatment accorded them, and have already held one meeting to study the plan carefully with a view to obtaining more favorable conditions. H. Biermans, organizer and former president of Belgo Canadian, has published a notice in the daily press strongly urging holders of securities of this company not to deposit their securities for exchange pending further consideration of the plan, more particularly as regards the new board of directors.

A phase of the situation which has not been publicly discussed or referred to in the proposed plan is the possible effect on some of the individual mills. The report of the Committee states that all classes of security holders have been duly considered. It does not say, however, that the communities built, established and encouraged to grow by the building and extension of the individual units of the Corporation have received similar consideration. It would be unfortunate if, in the rehabilitation of the company, the interests of these communities were not thought of and given an opportunity to recover from difficulties associated

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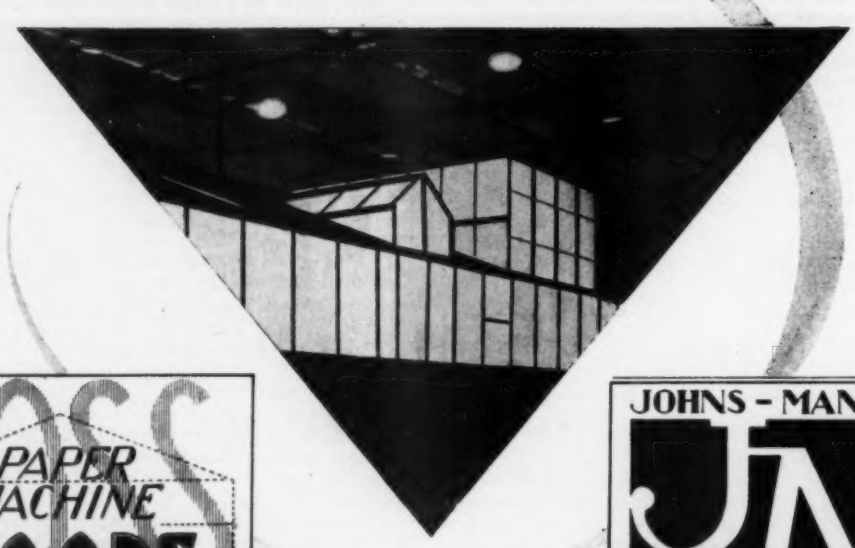

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ROSS SYSTEMS

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with unemployment now affecting them. There are those who feel that reversion of the mill units to individual management would most benefit the communities in which they are situated.

Letters were sent last month to the Class A shareholders of St. Lawrence Corp., the preferred shareholders of St. Lawrence Paper Mills Co. and the common shareholders of Brompton Pulp and Paper Co., announcing deferment of the current quarterly dividend on these securities. It was indicated that this was a matter of caution which was considered to be in the best interests of the companies concerned until the immediate future of the newsprint industry can be more accurately predicted.

A motion challenging the jurisdiction of the Quebec courts in the $800,000 suit by Price Bros. against nine other newsprint firms having been dismissed by Chief Justice Sir François Lemieux recently, an appeal will be heard during the October term. Price Bros. allege the sum is due them "in averages," and argument centered around whether the case should be heard in Quebec or in Montreal.

Directors of Dominion Engineering Works, at a meeting held in Montreal last month, decided to pass the quarterly dividend payment due to be declared at that time. While no statement was forthcoming from the board in regard to this action, such a step was foreshadowed when the last declaration was made in February, when the annual rate was reduced from $4 to $2.40 per share.

The sympathy of the paper trade has been extended to M. J. Griffin, of Dominion Containers, Montreal, in the death of his wife which took place recently. Mr. Griffin is the dean of carton salesmen in Montreal and district.

Good Showing by Canadian International Paper

The 1930 annual report of Canadian International Paper Co. shows net revenue available for interest and depreciation of $5,724,726, as compared with $5,934,185 for 1929. After deducting depreciation, earnings for 1930 available for interest amounted to $4,230,147, or over 2⅔ times the interest requirements on all of the company's first mortgage bonds and prior liens. Revenues from the newsprint operations of the company were larger in 1930 than in 1929, but this improvement was offset by lower revenues from the bleached sulphite mills.

For the first five months of this year the company's earnings, after making the deductions for the five months in connection with the recently announced newsprint price cut, are approximately equal to the earnings for the corresponding period in 1930, the decrease in selling price being offset by the substantial reduction in production costs and in overhead expenses.

Net additions to fixed properties and working capital during 1930 amounted to $3,667,730. Funded debt was decreased $637,020, through action of sinking funds and small maturities. Funds for these purposes were obtained from current earnings. At the end of the year current assets amounted to $19,692,606, or almost three times current liabilities of $6,974,424, including open account indebtedness to International Paper Co. amounting to $4,831,052. The company had no bank loans.

◆ ONTARIO ◆

Abitibi News

Reflecting the trying times being experienced by producers of newsprint and pulp, directors of Abitibi Power and Paper, at a meeting held in Toronto on June 24, deferred the dividend due July 1 on the company's 6 per cent cumulative preferred issue. The dividend on the smaller seven per cent issue was declared a short time before.

Following a tour of inspection of the power construction project at Abitibi Canyon by Vice-president L. R. Wilson, of Ontario Power Service Corp., G. F. Hardy, designing engineer, and T. T. Whittier, his assistant, it was announced that costs will not exceed the original estimates and that nothing has developed to prevent completion of the construction of the 275,000-hp. plant on schedule by October 1, 1932. Unusually favorable river-flow conditions this spring aided in keeping the work up to schedule.

With the price of newsprint and a production ratio at the lowest point in its history, Abitibi is earning its bond interest, allowing full charges for maintenance, depreciation and the cost of carrying idle mills. It may be pointed out in this connection that the estimate of earnings available for bond interest is made on the basis of the present price of newsprint as retroactive to January 1, 1931. The earnings indicated have been secured, not at the cost of letting down the quality of the company's product, but by maintaining and steadily improving it.

Interest on the $50,000,000 of bonds outstanding, amounting to $1,250,000 and covering a six months period, was paid on the due date, June 1. Moreover, the sum of $845,000 was forwarded to the National City Bank, New York, trustees of the first mortgage gold bonds, for cancellation of the principal amount to the extent mentioned, in satisfaction of the sinking fund instalment due April 25, 1931.

As a result of conferences which Premier George S. Henry and the Hon. William Finlayson, Minister of Lands and Forests, had last month with the board of directors of the Abitibi Company in Toronto, there is hope, it is stated, that the tonnage of the company's Iroquois Falls mills is to be so allocated in the near future as to provide for the operation, on a part-time basis at least, of its now idle plants at Sault Ste. Marie and Sturgeon Falls. The conferences are continuing and neither statement nor comment from the Government or the company has been forthcoming. Strict silence is being maintained, it is said, in order that the present negotiations may in no way be jeopardized.

According to recent reports, there appears to be every possibility that full six months' interest payments will be made on September 1 to holders of the six per cent $10,000,000 bond issue of the Great Lakes Paper Co. The coupons were not honored by the Backus subsidiary when they came due on March 1, and their 60 day's grace period expired on May 1. No payment has been made and the National Trust Co., trustee for the bondholders, withheld serving formal notice of default, as could have been done within 31 days of expiration of the period of grace, in the hope of arriving at an arrangement with the Fort William industry to safeguard the investors' interests.

Indication of the extent to which the pulpwood industry in northwestern Ontario was affected last year by the newsprint situation and business conditions generally is seen in an annual report issued by J. H. Milway, Crown timber agent, showing that a total of 175,625 cords of pulpwood was cut in this district in the season of 1930-31, as compared with a total cut of 542,087 cords taken out in the previous season.

Litigation relating to a $14,000,000 newsprint contract claimed negotiated by Charles E. Campbell, of Edmonton, with the Lake St. John Power and Paper Co. and the Newspaper and Magazine Corp. of New York in 1926, still continues. Last month, Everett Bristol, K. C., representing the National Trust Co., executor of the estate of the late E. A. Wallberg, obtained before Chief Justice Rose at Toronto leave to appeal the judgment of Mr. Justice Wright who found the executors liable for the payment of $50,000 to Campbell by virtue of a judgment of the Privy Council in the case.

F. T. Jenkins, assistant woods manager of International Paper Co. of Newfoundland, has severed his connection with the latter organization and is now connected with Canadian Airways, Ltd.

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Medium

Fine

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The old Riordon mill at Merritton, one of the oldest pulp mills in Canada, was destroyed by fire last month. The loss was negligible as the mill had lain idle for years since the property was purchased by International Paper, and the machinery had recently been sold as junk.

His many friends in and outside the paper industry are delighted to see T. E. Weldon, vice-president of Provincial Paper, Ltd., back again at his office after a protracted illness of some five months' duration.

❖ BRITISH COLUMBIA ❖

Barber-Ellis Building Warehouse in Vancouver

Barber-Ellis, Ltd., envelope manufacturers and wholesale paper dealers, have announced that they will shortly commence the construction of a new warehouse on Homer St., Vancouver. The decision to proceed with the erection of the new plant was reached following a recent visit of C. G. Ellis, managing director of the firm. The organization now has established warehouses in all the major cities across Canada, with their head office at Toronto.

The new structure will have a frontage of 75 feet on Homer St., and will be 120 feet deep. It will be four stories high, will be of complete fireproof construction, and will cost approximately $75,000.

The Vancouver Branch of the Barber-Ellis organization has been carried on for the past 19 years, and has for a considerable time past been under the management of Lorne D. Graham.

New Mill Planned for Vancouver Island

Involving an expenditure of approximately $6,000,000, plans for the development of an industrial center on the west coast of Vancouver Island, within easy reach of Victoria, have been announced by D. A. Grover, president and general manager of the Lone Star Timber and Pulp Co., with United States headquarters at Seattle. Mr. Grover stated that he had been at Port Renfrew, where he had inspected the possibilities of the West Coast port for the erection of mill units and its facilities for shipping manufactured products.

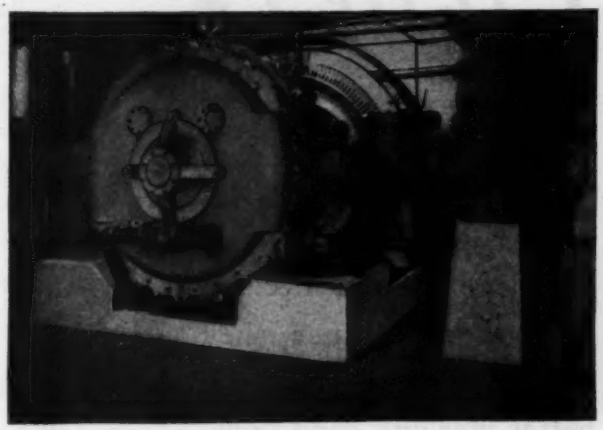
He said his company had options on 300 sections of timber north, east and west of Port Renfrew harbor and had secured 180 acres on the east side of the harbor for the erection of mill buildings and the creation of a modern industrial town. The Lone Star Co. is being incorporated in British Columbia by Messers. Courtenay and Elliott. The development of the plant contemplates the construction of a number of units, including a pulp mill, saw mill, veneer mill and shingle mill, as well as a hotel, school, rooming houses and 150 dwellings for employees with families.

Howard Cole, New York capitalist and owner of extensive Sitka spruce timber limits on Queen Charlotte Islands, accompanied by Mr. Steele, of Los Angeles, president of the Massett Timber Co., owners of the Buckley Bay mill, recently visited Prince Rupert for the purpose of investigating the possibilities of establishing a pulp mill in that vicinity. The proposal is that the timber limts on Massett Inlet and a group of timber limits at Usk, together with other limits nearer Prince Rupert, shall be taken over by the company.

Joseph Falconer, formerly assistant resident manager at Powell river, has been appointed treasurer of the Powell River Co.

Robert H. Scanlon, assistant resident manager at Powell river, was again bereaved recently, through the death of his mother who died only a short time after husband, M. J. Scanlon, who was president of the Powell River Co.

ONE of EIGHT No. 11's
at the Anglo-Canadian Pulp and Paper Co.



One of eight No. 11 Nash Hytor Vacuum Pumps installed at the Anglo-Canadian Pulp & Paper Company's Mill at Limoilu, Que.

EIGHT No. 11 Nash Hytors are relied on for maintaining the vacuum on suction couch and press rolls and for similar services in the Anglo-Canadian Pulp & Paper Company's mill at Limoilu, Que.

In this mill, four No. 728 Jennings Flat Box Pumps, three Jennings Centrifugal Pumps and two Jennings Dryer Exhaust Units are also installed.

This installation is typical of the Nash equipment in more than 800 paper mills in the United States and Canada.

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❖ NEW BRUNSWICK ❖

Bathurst Profits Reduced

The annual report of the Bathurst Power and Paper Co. shows that for the year ended December 31, 1930, operating profits were $132,953, against $281,550 in 1929 and $411,781 in 1928, in each case after provision for depletion of limits at the rate of $1 per cord on wood cut. Deducted from this was $59,871, a write-off on idle expenses and inventory adjustments, leaving a balance of $73,082 before depreciation, which item in 1929 totalled $200,000. The balance noted was added to surplus, brought forward at $107,918, making a net profit and loss balance of $181,000. No dividends were paid during the year.

A satisfactory aspect of the showing, however, is the strong liquid position in which the company stood at the close of the year, net working capital being $2,493,426, against $2,387,933 at December 31, 1929. Current assets exceeded current liabilities in a ratio of 21 to one, and working capital alone represented about $3.50 a share on the combined A and B stocks, currently quoted around four.

At the annual meeting of the company held on June 10, the following directors were elected: Brigadier-General J. B. White, H. J. Webb, P. A. Thomson, A. J. Nesbitt, J. B. Woodyatt, E. Rossiter and George M. McKee.

A strong movement has been started to secure re-opening of the Fairville sulphite mill of the Nashwaak Pulp and Paper Co., which was closed down on October 20, 1930, and is now for sale. The 200 or so men who were thus thrown out of work have nearly all been unemployed since that time, and hope is entertained that Federal unemployment relief funds may be secured to counteract any deficit in operation that may develop if the committee at present attending to the matter should succeed in getting the mill into operation once more.

American Society for Testing Materials

The Thirty-fourth Annual Meeting of the American Society for Testing Materials was held at the Stevens Hotel, Chicago, June 22-26. A general session was held on the first morning of the convention, followed by 16 special sessions at which important technical papers were presented and discussed. The reports and papers presented covered a diverse field including corrosion, fatigue of metals, magnetic testing, nonferrous metals, cement and concrete, paving materials, paints and many others.

Special mention should be made of the symposiums, including the Symposium on Effect of Temperature on the Properties of Metals, arranged as a joint session with the American Society of Mechanical Engineers, the Symposium on Malleable Iron Castings, under the joint auspices of the Society and the American Foundrymen's Association, the Symposium on Weathering Characteristics of Masonry Materials, and the Symposium on Abrasion Testing of Rubber.

Exhibits

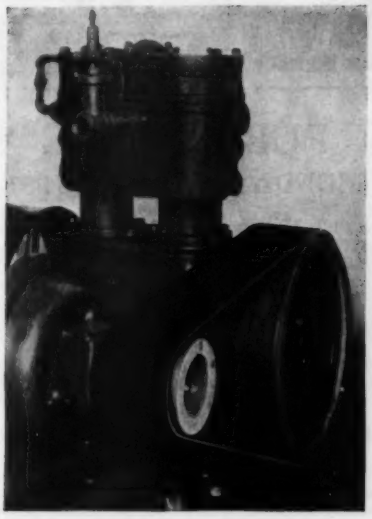
At this meeting, the Society staged its first exhibit of testing apparatus and machines. From the large number of exhibitors and the apparatus displayed, this part of the program undoubtedly established itself as a permanent feature. A visit to the exhibition hall revealed a large number of attractive booths, several of the exhibitors showing apparatus having direct application to the papermaking field.

Bausch & Lomb Optical Co., well-known manufacturer of microscopic instruments, displayed an interesting exhibit of special apparatus, including a photomicrographic camera for testing surfaces of metals; the spectograph for the detection of impurities in metals, and the hydrogen ion colorimeter.

At the booth of the Brown Instrument Company was exhibited its potentiometer pyrometer. A number of new features are claimed for this potentiometer over other such devices.

Baldwin-Southwark Co. had on display its Southwark-

More Than



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Emery Universal Testing Machine, which had a capacity of 60,000 lb.

Testing instruments and thermometers were displayed by the C. J. Tagliabue Mfg. Co., and a complete line of laboratory equipment was shown by both the Central Scientific Co. and E. H. Sargent. Fred S. Carver had a nice display of laboratory presses, which have been introduced recently to the paper industry.

Christian Becker, Inc. and Associate Company, The Torsion Balance Co., exhibited analytical chainomatic balances, chemical and laboratory balances and weights.

W. S. Tyler Company had on display samples of different gauges of wire cloth, and also featured its Tyler Screen Scale Series of Sieves which are used by a large number of industrial and scientific laboratories.

Testing Machines, Inc., associated with H. Z. Schniewind, Foreign Paper Mills, Inc., presented a special exhibit of paper testing equipment, featuring particularly the Schopper Standard Folding Endurance Tester, Schopper-Dalen Bursting Strength Tester and standard micrometers, as well as other instruments of interest to paper technologists. This exhibit attracted the interest of those paricularly interested in paper testing devices.

The Westinghouse Electric & Mfg. Co., exhibited a small hydraulic torsion machine and a fatigue testing machine.

A paper indicating micrometer, which is just being introduced was shown by the Western Electric Company. This micrometer may be employed for measuring the thickness of papers where thickness is an extremely important factor. A paper porosity tester to test the resiliency of paper was also displayed by this company.

❖ NEW YORK CITY ❖

Waxed Tissue Simplification

A general conference of representatives of the industry, held under the auspices of the Division of Simplified Practice of the Bureau of Standards, U. S. Department of Commerce, in conjunction with a meeting of the American Waxed Paper Association, in New York on May 20 approved a simplified practice recommendation covering the sizes, count and method of packing waxed tissue paper. The specific items included in the recommendation are waxed sheet tissue, lunch rolls, lunch envelopes, butter wraps, and household rolls.

The appointment of a standing committee of the industry, composed of representatives of manufacturers, distributors and consumers was also authorized by the general conference. It will be the duty of this committee to periodically review the recommendation and to make such changes necessary to keep the program abreast with current practice in the industry.

William N. Smith

Following a year's illness William N. Smith, president and treasurer of the Bogota Paper Board Company, Bogota, N. J., which he organized 35 years ago, and one of the most widely known boxboard manufacturers in the country, died at his home in Bogota on June 22.

Mr. Smith served three terms as mayor of Bogota, and was also president of the Bogota National Bank and the Bogota Building and Loan Association. He was born in Buffalo and started his business career in Colchester, Conn., moving to Bogota in 1896. He was active in church work. A widow, Mrs. Edith Welsh Smith, survives.

With a score or more of the leading waste paper concerns in New York City and vicinity represented, the New York Chapter of the Waste Paper Institute was formed at a meeting in the Hotel Astor on June 9. Andy C. Costarino, of Hicks-Costarino, Inc., Brooklyn, was elected chairman of the Chapter; Alex Adelman, of I. Hershman & Company, Inc., New Haven, was elected vice chairman, and Charles M. Haskins, executive secretary of the National Association of

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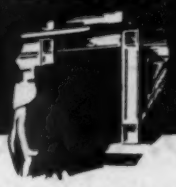

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Waste Material Dealers, Inc., was chosen secretary and treasurer.

Gordon Blanchard with Eaton Co.

Gordon Blanchard has resigned as sales manager of the Crocker-McElwain Company, Holyoke, Mass., to become sales manager of the Eaton Paper Company, of Adams, Mass., and will make his headquarters in the New York offices of the latter company at 1 Park avenue.

Mr. Blanchard is widely known throughout the industry, and as sales manager of the Crocker-McElwain Company has traveled extensively calling on the trade all over the East. Prior to going to Holyoke as assistant sales manager of the Chemical Paper Manufacturing Company, he represented the Byron Weston Paper Company, of Dalton, Mass., in the West. He hails from Brookline, Mass., and graduated from Dartmouth College in 1908. He has been in the paper industry since leaving college, serving for three years as president of the Paper Makers Advertising Club, publishers of Direct Advertising.

William H. Holden, formerly manager of the fine paper division of George W. Millar & Company, Inc., leading New York paper merchants, has opened an office at 15 Park Row, New York, where he plans to handle all grades of paper and cardboard.

The New York City office of the Allied Paper Mills, Inc., is now located at 230 Park avenue in the New York Central Building, the local warehouse of the company being maintained at 471-473 Eleventh avenue, New York.

Henry Lindenmeyr & Sons, New York paper merchants, have filed notice of an increase in capitalization from $1,600,000 to 16,000 shares of which 4,600 are preferred of $100 value each, and 11,400 are common shares of no par value.

The American Tissue Mills, 20 West Twenty-second street, New York, of which Benjamin F. Perkins is president, has leased executive office space in the new Empire State Building, Fifth avenue and Thirty-fourth street, New York.

C. R. Nutter, affiliated with the kraft industry for many years, is now a member of the sales organization of the Hummel-Ross Fibre Corporation, manufacturer of all sulphate pulp kraft paper and board, with headquarters in the New York sales office at 450 Fourth avenue and covering the metropolitan New York territory and New England.

Charles R. McMillen, who has resigned as president and become chairman of the Board of the Union Bag and Paper Corporation, has been elected vice president and director of the St. Regis Paper Company. Mr. McMillen succeeds M. B. Wallace as chairman of the Union Bag and Paper Corporation. Alexander Calder has been elected executive vice-president of the company in charge of all operations.

Harold G. Ingraham with Bird Machine

An announcement of interest to the industry has just been made by the Bird Machine Company, South Walpole, Mass. This announcement brings news of the appointment of Harold G. Ingraham as assistant to F. F. Frothingham, representative of the company in the middle west and on the Pacific Coast.

For a number of years, Mr. Ingraham has been associated with V. D. Simons, Inc., paper and pulp mill engineers of Chicago, and through this connection is very well-known to the paper industry. Mr. Ingraham's headquarters will be with Mr. Frothingham at the Chicago office.

J. H. Baker, formerly assistant to Mr. Frothingham, has recently made a connection with the Northern Paper Mills, of Green Bay, Wis.

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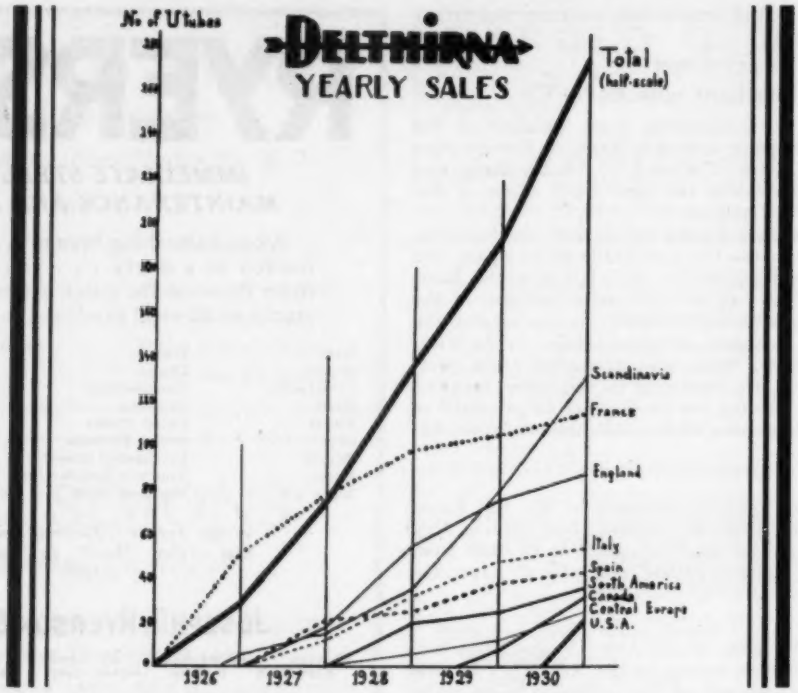

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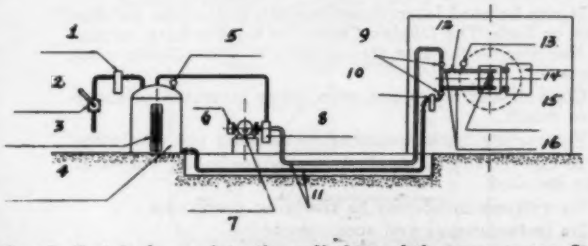
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Recovery of Soda

THE author describes a method for recovering soda from waste liquors in a rotary furnace. An installation of this type is shown in the accompanying illustration. The pump for supplying oil to the installation is shown at (2) and the oil passes through the filter (1). The oil flows into the tank (4), which holds 600 liters under pressure and which is provided with a liquid level gauge (3) and a manometer (5). The oil is drawn out of this tank by means of a compressor (7) which is provided with a filter (6) for

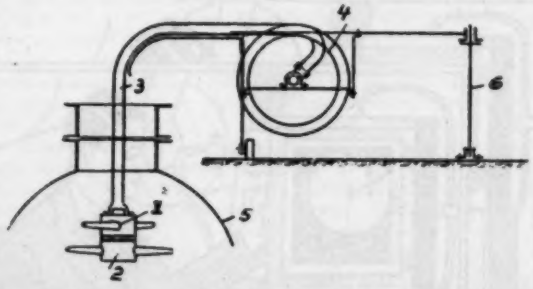


the air that is drawn into the cylinders of the compressor. It is also provided with a de-oiling device (8) for removing the oil from the air. The pipes (11) are for air and oil and are located in a gutter. The oil is passed through a filter (10) and reaches the burner (15) which can be turned about in any desirable direction. Pivots (9) are provided in the pipe system and a pivoted arm (16). An air-regulating valve is shown at (12) and a manometer is provided at (13). A door for clearing the furnace is provided at (14).

The furnace is divided up into two parts. In the first half of the furnace the liquor is concentrated, while in the second part the sufficiently concentrated liquor is burned, and the heat, that is developed, is used for concentrating the liquor introduced into the installation. M. Rouveyre, Le Papier, 1931, 277-282.

Feeding Spray Water in Emptying Digesters

IN order to be able to start spraying the contents of the digester in a systematic manner immediately after the opening of the digester for the purpose of removing its contents and thus expose the workers to the fumes coming from

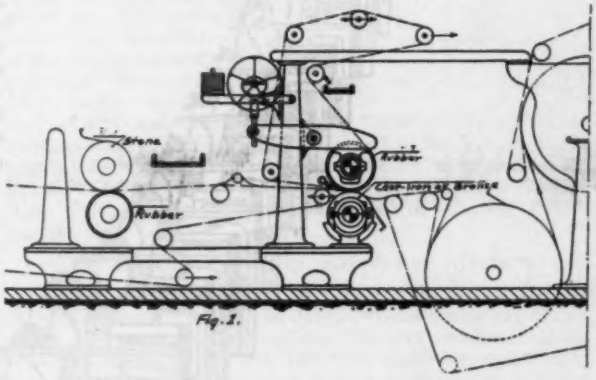


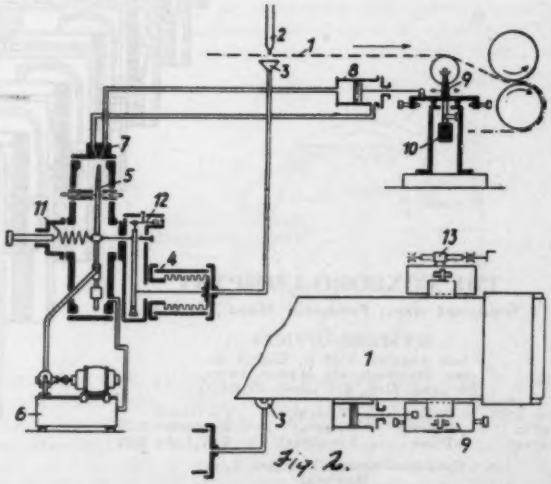
the digester for as short a time as possible, the arrangement, which is shown in the accompanying illustration, is provided. The pipe (3) which carries the spray head (1) (2), is wound around a drum (4) of a winding device, which is rotated as a whole around an axis (6) which is parallel to the axis of the digester (5). The spraying device is thus arranged so that it delivers water into the digester or it may be swung aside so that the digester can be filled with liquor and chips for another digestion. The winding apparatus permits the pipe to be rapidly removed from the digester. Hans Meyer G.m.b.H., Breslau, Germany. German Patent No. 511,769.

Innovations in the Paper Industry

FIGURE 1 shows a new arrangement of a wet press for the papermaking machine. The feature of this arrangement is that the two press rolls can be interchanged. The upper roll is made with a rubber covering, while the lower roll is made of stone, cast iron or bronze.

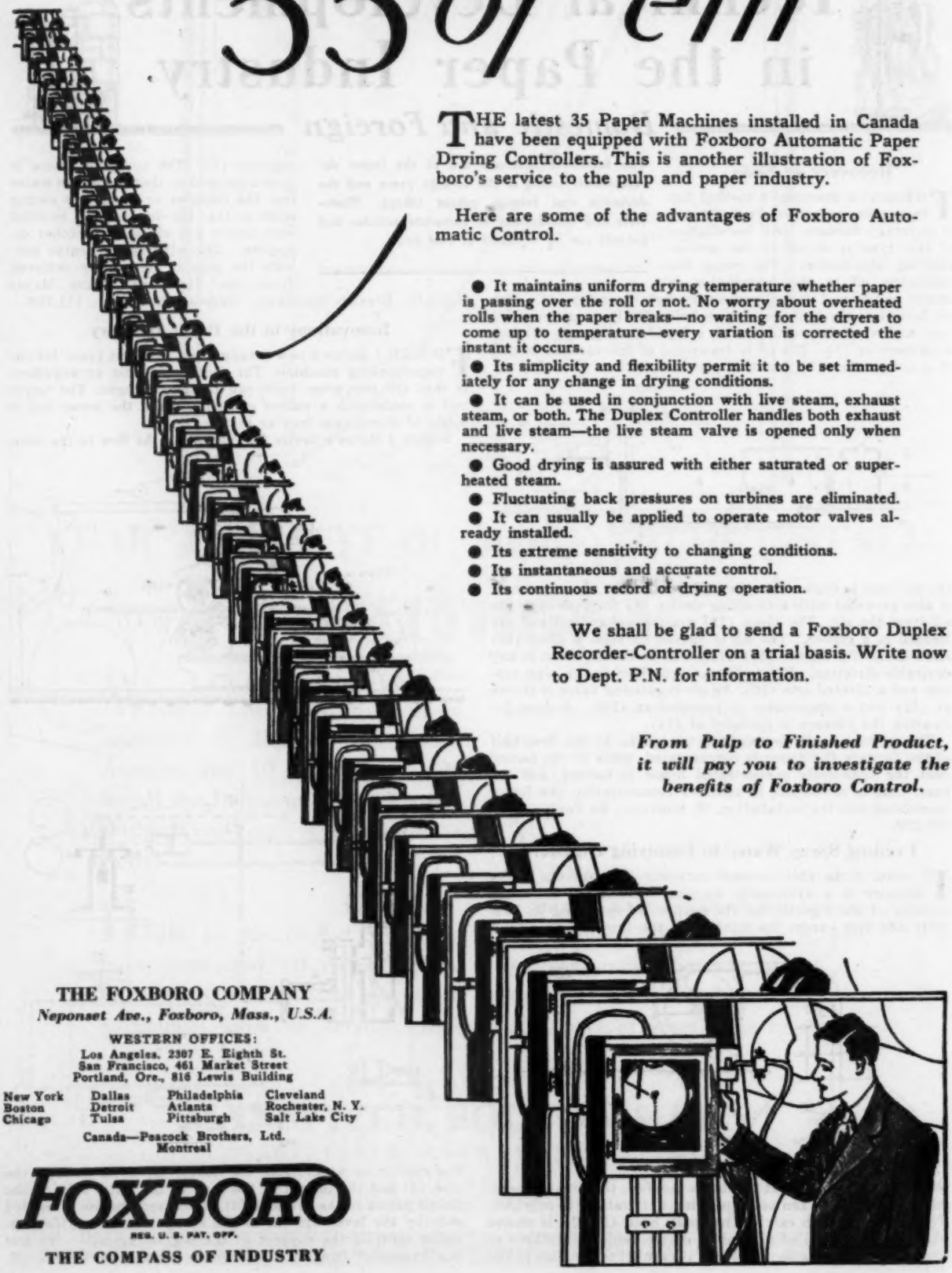
Figure 2 shows a device for regulating the flow to the wire.





The current of water from the nozzle (2) flows through the pipe (3) and the impact of the drop of the water acts on the elastic piston in the cylinder (4), whose movements is carried over by the lever system to the spray tube (5). This regulator controls the support of the regulating roller (9) and this causes shifting of the wire to correspond thereto. M.

35 of 'em



THE latest 35 Paper Machines installed in Canada have been equipped with Foxboro Automatic Paper Drying Controllers. This is another illustration of Foxboro's service to the pulp and paper industry.

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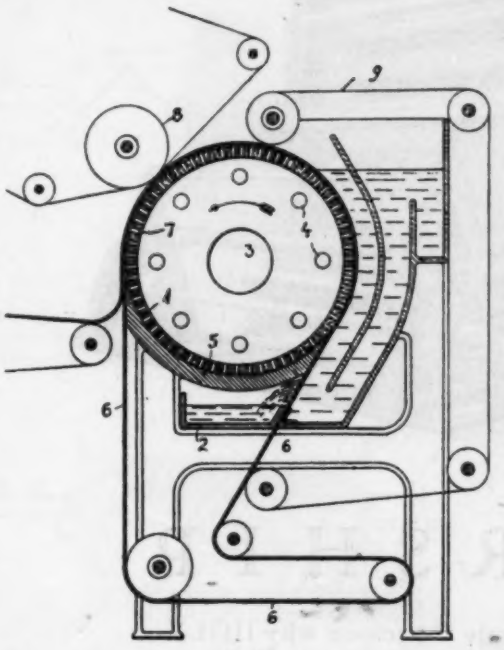
THE COMPASS OF INDUSTRY

Wintermeyer, Wochenblatt fuer Papierfabrikation, 1931, pages 326 to 330.

Suction Roller for Dehydrating Paper and Pulp

ONE of the advantages obtained by means of this new machine, which is shown in the accompanying illustration, is that uniform settling of the mass is obtained, so that a constant direct suction effect takes place over an important part of the circumference of the suction roll. Furthermore, the



material on the suction roll is also subjected to pressure, so that the web of material that is formed thereon is uniform and contains a minimum proportion of moisture.

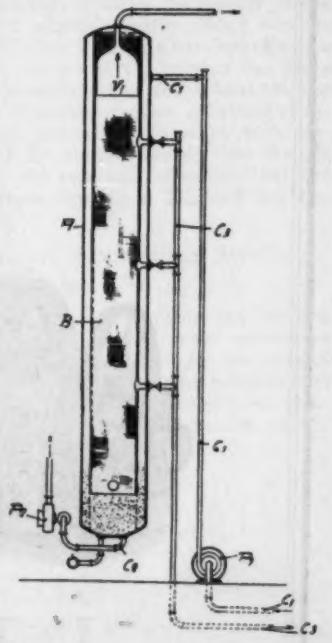
In the new type of dehydrating apparatus, the hollow roll (1) is brought under strong inner suction action. The roll is provided with the openings (7), which are arranged in the form of a circle as in the case of an ordinary perforated plate or are stretched out in rows longitudinally as the slots in a straining plate. These openings lead into the interior of the roll.

An endless felt or wire cloth (6) is led over the roll. Where the roll is not covered by this felt or wire cloth, a cover plate (5) is provided.

The apparatus works in the following manner: The wire cloth moves past the open water channel (2) and thereby absorbs a thin coating of fibers. The water which contains fiber values, passes through the wire cloth and is collected in the channel (2) and used as diluting water or the like. Then the wire cloth with its coating of fibers passes over the revolving roll (1), whose entire circumference is under a vacuum. The filtered water flows through the wire cloth (6) and the openings (7) into the interior of the roll and is then removed through the hollow shaft (3) or through openings (4) in the side wall of the roll. These openings are connected with a vacuum pump. The film of fibers then passes between the press roller (8), as usual, and is removed from the wire cloth in the usual manner, as soon as the point is reached where the wire cloth no longer makes contact with the roll. Julius Stephensen, Drammen, Norway. German Patent No. 517,661.

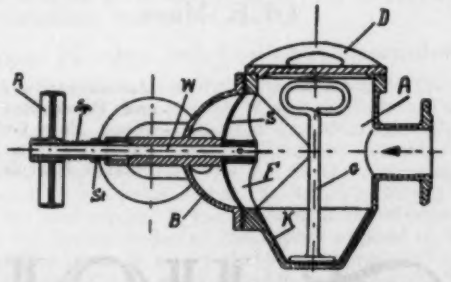
Clarifying Waste Waters

THE apparatus, which is shown in the accompanying illustration, consists of an external vessel (A), which has the shape of a vertical pipe. A vacuum pump is connected to the upper end of this vessel. The white water, containing fiber values enters through the pipe (C_1), which is located at the side and near the upper end of the vessel. Inasmuch as the white water is subjected to the action of a vacuum within the closed vessel, the air which is enclosed within the bundles of fibers as well as the external air on the surface of the fibers is removed by suction. The fibers consequently fall to the bottom of the apparatus and form a thickened mixture of fibers and water in the lower part of the same. This mixture is removed from the vessel through the pipe (C_2) and the pump (P_2). A screening pipe (B) is built into the interior of the vessel (A), and this is done in such a manner that an annular space is left between the two vertical vessels (A) and (B). The white water is conducted into this annular space by means of the inlet pipe (C_1), while the pipe, which leads to the vacuum pump, is connected so that it extends into the screening tube (B). This pipe is shown at (V). Due to the action of the vacuum a layer of fibers forms in the usual manner over the surface of the screening pipe. This serves as a filter with the result that the clarifying action of the apparatus is improved. Thus only filtered water reaches the interior of the apparatus, while the fibers remain within the annular space. These fibers finally fall to the bottom of the apparatus to form a thickened mixture of fibers and water. The clarified waste waters are then removed through the pipe (C_2). Fritz Arledter, Koeln-Kalk, Germany. German Patent No. 512,323.

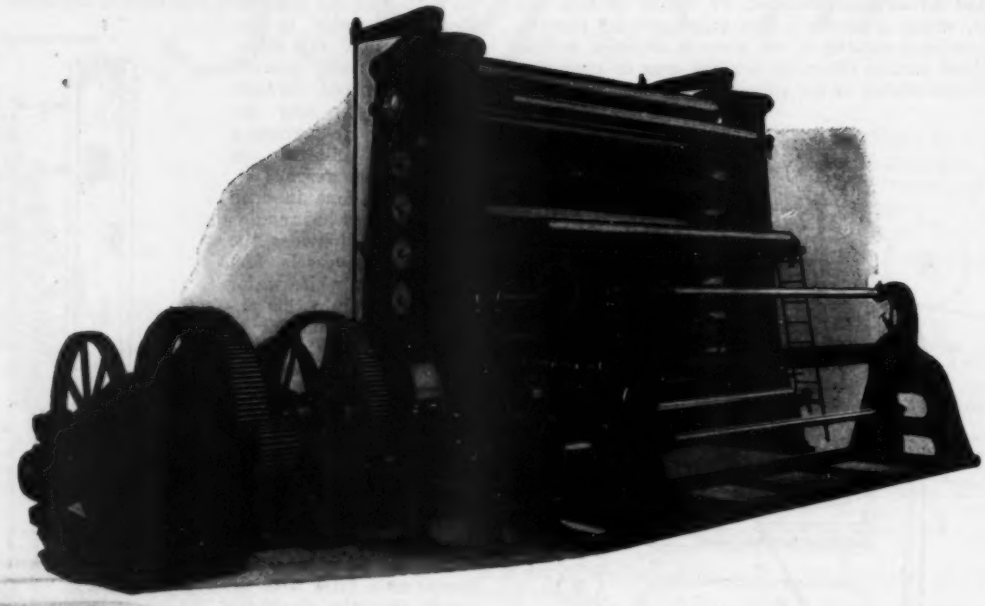


Dirt Catcher for Pulp and Water Mixture

THE dirt catcher is inserted between the pump and the suction line valve and the details of the device are shown in the accompanying illustration. The dirt catcher consists of the casing parts (A) and (B). The screening wall (S) is located between the connecting flanges of these two parts of the casing. This wall is provided with tightly-fitting packing rings, so that a pressure-tight closure is obtained. The screening wall (S) is made from a suitable sheet metal and



is provided with an opening. The casing part (A) is made in cylindrical form, while it has a conical form below and can be closed by means of the cover (D) which is also made pressure-tight by means of packing rings. The collecting basin or box (K) is arranged within the casing part (A). The shaft (W) is located within the casing part (B) in such a manner that it can be rotated. This shaft is led through the end of the casing and the connection is rendered tight by means of the stuffing box (St). A pulley is located at the end of the shaft at (R) and the driving mechanism is connected thereto by means of a belt. The other end of the shaft passes through the screening wall (S) and this end of



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the shaft is connected with the stirrer (F). A strong spring (Sp) can hold the stirrer against the screening wall (S). Franz Hassmann, Kiel, Germany, German Patent No. 516,212.

New Machines for Debarking Wood

THIS article describes a number of interesting machines, which operate on the principles of friction and rubbing and which are used for removing the bark from wood pre-

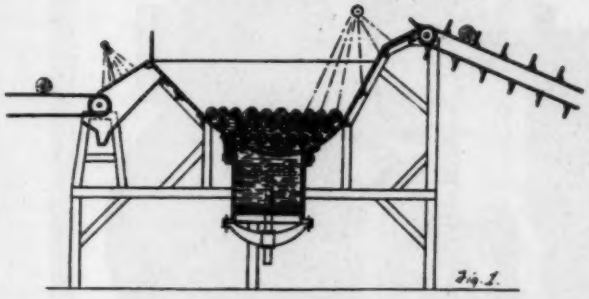


Fig. 1.

paratory to its conversion into pulp. The fundamental mechanical details of debarking machines are outlined and illustrated in diagrammatic form. Figure 1 shows a debarking

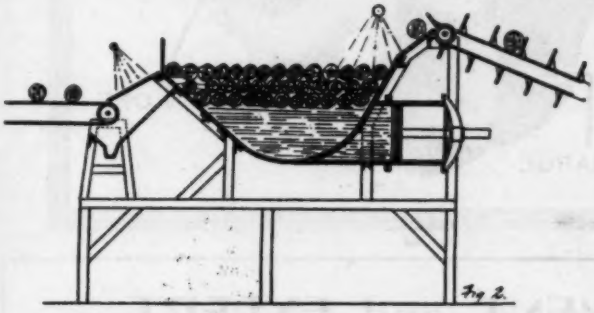


Fig. 2.

machine in which the level of the water is raised and lowered by means of a piston which operates within a cylinder. In Figure 1, the cylinder is shown located at the bottom, while in Figure 2 it is located at the side. The cylinder is con-

Fig. 3.

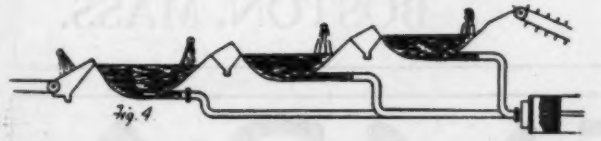


Fig. 4

nected to the trough-shaped container of the wood so that the connecting wall is merely a screen. The manner in which the wood is fed to the debarking machine is evident from the illustrations. In Figure 3 is shown a device which consists of a number of troughs, all provided with a cylinder for keeping the water at the proper level. Figure 4 shows a simplified method of constructing this apparatus, the water level in the three troughs being controlled by means of a triple-cylinder pump. W. Schmid, Der Papierfabrikant, 1931, pages 241 to 244.

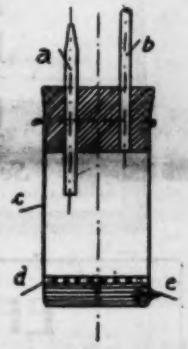
Water Glass as an Aid in Paper Sizing

PRACTICAL experiments have demonstrated the usefulness of water glass for sizing paper. The water glass is added to the beater. Pulp was added to the beater and five parts by weight of blanc fixe for every 300 parts by weight of pulp. About the same proportion of water glass in water solution was also added, and thereafter the necessary amount of alum. The latter is added about one hour later. The beating operation lasts from three to three and one-half hours. The author states that he was able to add much more mineral matter to the paper without injuring the quality of the paper, when the amount of mineral matter added was increased threefold, the loss of fiber was quite considerably less than when water glass was not employed. Further the white water was much clearer. The author also found that the use of water glass helped him in solving certain problems relating to the use of rosin size. Experience in other mills corroborated the conclusions of the author, namely that the use of water glass removes all the common difficulties that are encountered with the use rosin size. Anon. Zellstoff und Papier, 1931, page 204.

Determination of Factors Controlling Swelling of Pulp

THESE factors are understood to include the suction height, which is based on water, the linear stretch as well as the absorption of the swelling agent by the pulp in the treatment with a 17.5 per cent by weight concentrated solution of sodium hydroxide, the so-called mercerizing solution. It is also necessary to determine the density of the sheet in comparing various samples of pulp.

Special apparatus of the type, which is shown in the figure, is used in the determination of the absorption of swelling agent by the pulp. It must be mentioned that the apparatus, which is used for this purpose, depends in its operation of a reaction mechanism which is subject to much variation and which is under the control of a large variety of factors. The determination must be carried out in the sodium hydroxide solution of the concentration, which has been mentioned above, and not in other media. The symbol (a) designates the air inlet tube, (b) the outlet tube, (c) is the weighing vessel, (d) the filter plates and (e) five layers of the pulp.



Various interesting relations and conditions that control the aforementioned factors are also discussed in this article, the discussion being based on actual experimental data obtained. Thus one series of experiment was carried out to determine the relation between the time of swelling and the linear stretch or expansion. The results showed that the maximum linear expansion was obtained within one minute. It is unnecessary to prolong this test to ten minutes as is usually done. Dr. August Noll, Der Papierfabrikant, 1931, pages 114-6.

Copper Number and Resin-Fat Determinations

VARIOUS details regarding the accuracy of the methods used and the development of new methods are discussed in this address. The results that are obtained with the aid of the various methods used in making the determinations are compared with each other. As far as the copper number is concerned, it is concluded that the Schwalbe-Wenzyl method gives the best results. It was found that the Wenzyl method allows the determination of the copper number in the short time of 20 minutes in a very simple apparatus, that is, a flask placed within a potassium chloride bath and not provided with stirring apparatus. Only one solution is used in the method, while the Fehling solution consists of two solutions, which have to be mixed together before the test is made.

Such solvents as ether and petroleum ether as well as dichloromethane and alcohol are used in making the resin-fat determinations. It has been found that the results, which were obtained with the aid of ether and petroleum ether did not show any great variation in the winter as compared with the summer. Resin difficulties can in no case be assigned to the greater resin content in the summer. This condition applied both to the ether-soluble as well as to the petroleum ether soluble resins. It was surprising that the ash determina-

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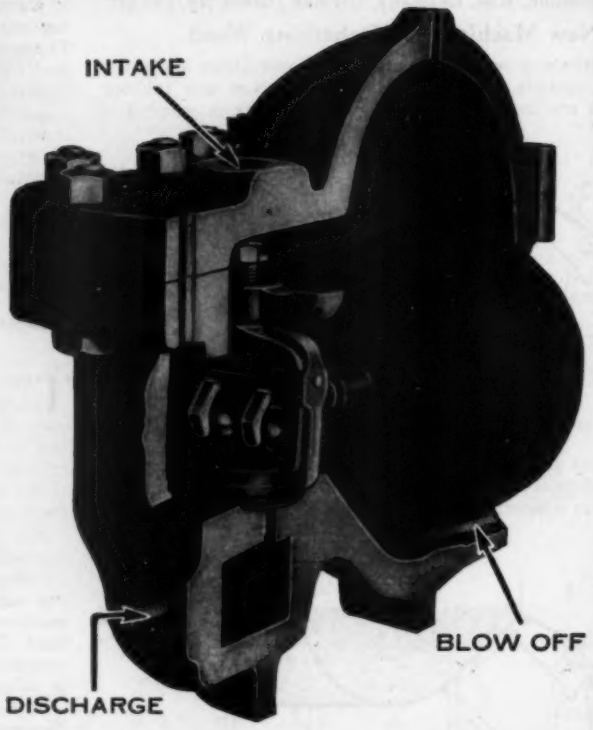

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tions were so far apart, and there appears to be some doubt that these differences are due to the fact that different methods are employed. On the other hand, the method is often not to blame at all and the cause of the difference is to be found in the irregular distribution of the mineral substances in the pulp. The exact details of the method, known as the Schwalbe-Wenzyl method, for the determination of the copper coefficient are given. Dr. Carl G. Schwalbe, Wochenblatt fuer Papierfabrikation, 1931, pages 279 to 280.

Scaldings on Opening of Rotary Spherical Digesters

THIS article is concerned with scalding accidents that take place on opening rotary spherical digesters which are used in the digestion of rag stock, old paper, straw pulp and semi-straw pulp. The author concerns himself with a rather complete analysis of the causes of these accidents and illustrates the processes that take place within the digester and that are directly responsible for the blowing out of the contents of the digester and the attendant scalding. Figure 1 shows a position of the digester, in which the latter is not perfectly vertical. This position of the digester is dangerous. Figure 2 shows two positions of the operator in opening the digester in which he is in great danger. Figure 3 shows the operator opening the digester in the correct manner.

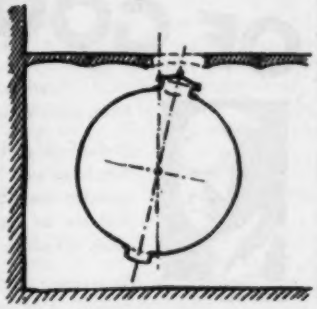
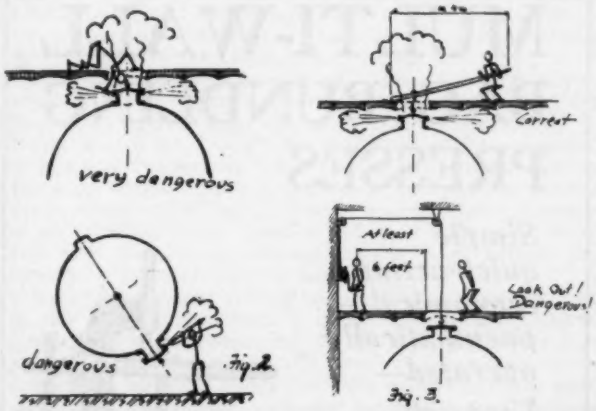


Fig. 1

The following precautions have been outlined with respect to the opening of the rotary digester. The opening of the digester should be delayed until the manometer drops to zero. A test should be made by opening the valve to see if there is still pressure within the digester. At least one of the bolts which hold down the cover should be left untouched



while the cover is raised so that a space of at least two centimeters is opened up. These bolts should not be entirely removed until clouds of vapor no longer issue out of the digester. The device for lifting the cover should be made in the manner of a longer hooked lever carried on a movable carriage. Great care should be taken when the cover is stuck and cannot be lifted in the ordinary manner. A block and tackle must then be used. Fritz Lesser, Der Papierfabrikant, 1931, pages 249 to 252.

Process and Apparatus for Drying Paperboard

THE feature of the apparatus is that the pile of paperboard sheets, that are being pressed, is enclosed within a housing, in order to be able to carry out the drying process with increase or decrease of the temperature and pressure. The pressing process is carried out in the usual manner with the aid of press plates and felt cloths. During the first stage of the process, external air is heated by means of radiators or electrical heaters, before it enters the housing, and by the addition of compressed air, the pressure therein is raised to approximately one to six atmospheres. After the pressure within the apparatus has reached 100 atmospheres, the air is allowed to escape from the press. External air is sucked into the housing. The mass of sheets of paperboard is then allowed to remain under atmospheric pressure with uniform heating and it is then subjected to a pressure of 150 atmospheres. The pressing operation is repeated several times until the pressure attains approximately 300 atmospheres. Richard Prueckner, Vienna, Austria. Austrian Patent No. 120,700, filed January 28, 1930.

Manufacture of Pulp

THIS process is concerned with an improvement in the usual process of making pulp with the aid of nitric acid. The difficulties, that have arisen in this process of manufacturing pulp, are due in the first place to losses of nitric acid values in the form of nitrogen oxide gases, and in the second place to the fact that the nitric acid does not dissolve the lignin out of the wood with any facility at all. When the process is pushed and an attempt is made to obtain rapid and complete removal of the lignin from the wood, then it is found that the cellulose fibers are themselves injured by the reagent.

It has now been found that it is possible to improve the process and remove these difficulties. This is done by introducing nitrogen oxide or gases, that contain nitrogen oxide, into the reaction mixture, with the result that the concentration of liquor, which effects the decomposition of the wood, remains constant, during the entire period of the digestion. The following example shows how the process is carried out.

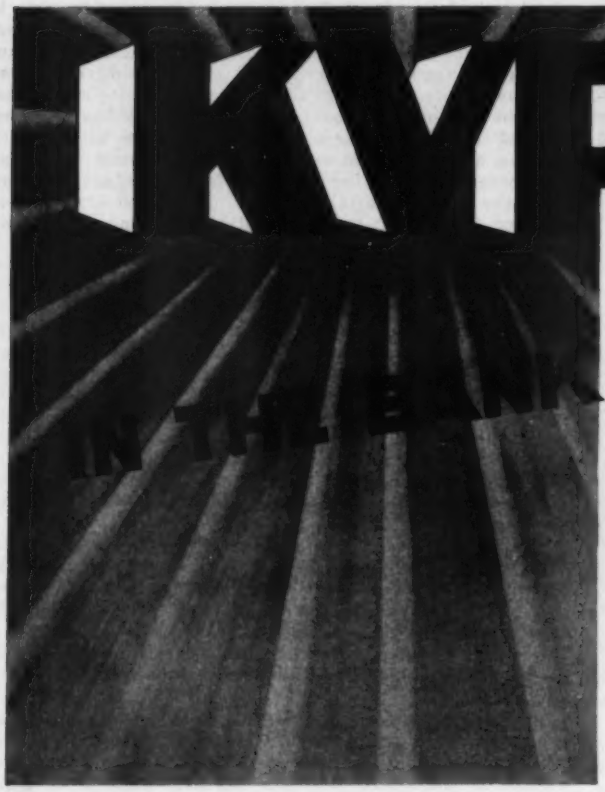
Beechwood chips are introduced into 50 per cent concentrated nitric acid solution, whereat the mass is agitated for one hour at a temperature of 30 deg. Cent. Nitrogen dioxide is introduced into the mixture, while it is being agitated. The nitrogen oxide gas, which escapes from the agitating vessel, is regenerated by the addition of oxygen and recovered as nitrogen tetroxide after condensation. It is possible to obtain by this process a yield of 470 parts by weight of pulp with a content of 84 per cent of alpha-cellulose from 1,000 parts by weight of beechwood chips dried at a temperature of 105 deg. Cent. The concentration of the acid after digestion is 50.2 per cent. It can be used for the digestion of other batches of wood chips. The loss of nitrogen, figured on the basis of the dried mass of wood that is being worked up, is one per cent. I. G. Farbenindustrie A. G., Frankfurt-am-Main, Germany. German Patent No. 518,154.

Formation of Foam on the Papermaking Machine

FOAM consists of air bubbles and has to be contended with in the manufacture of paper, the quantity of foam produced depending on the composition of the stock and the nature of the preliminary treatment to which the latter has been subjected. There are many conditions that are responsible for the formation of foam and among these may be mentioned the following:

The character of the water used; that is, the amount of carbonate in it, which may give rise to the evolution of carbon dioxide on coming into contact with acid substances used in the papermaking process. Excess of rosin size is another cause, as well as the reuse of back water. Certain coloring matters, such as orange D, scarlet, etc., promote foaming. When mechanical wood pulp which is made from fresh pinewood, is added to the pulp mixture, foaming is enhanced. When the stock is allowed to drop into the stuff chest or flows into the latter rapidly, foaming is favored. Foaming is also caused by warming very free stock. Foaming is naturally caused by rotating the agitator in the stuff chest too rapidly. It is said that a speed of four to five revolutions per minute is the maximum allowable.

Excess of rosin size used, is tested in the back water; a piece of litmus paper is used and an alkaline reaction indicates of too much size. This can be remedied by the addition of alum. It is stated that the addition of a little rapeseed oil to the stock in the stuff chest will reduce the foaming. Zellstoff und Papier, 1931, page 204.



LETTERS

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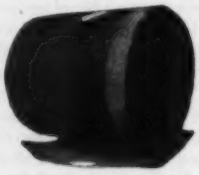

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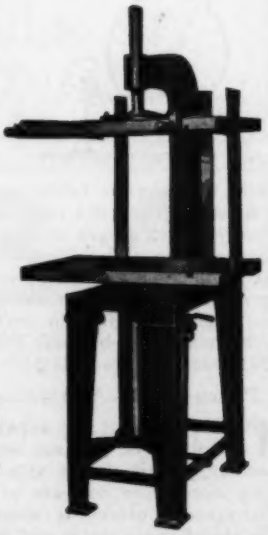

PAPER CONVERTING MACHINE CO.
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New York, July 1, 1931.

THE marked upturn in securities and in many commodities following the announcement of President Hoover's plan providing for a year's moratorium on all intergovernmental debts and reparations is reflected in a decidedly better feeling within the paper trade. The paper market has not been one of those commodity markets directly affected by this important development, but the improvement witnessed in the general situation has been creative of a much more encouraging sentiment among paper manufacturers and merchants, and there is no doubt that should the more favorable situation generally continue, demand for paper of various grades will register substantial expansion, to be followed by an appreciable increase in activity within the industry.

There are those who express the opinion that the sudden uptrend in stocks and bonds and the accompanying spurt in some basic commodities definitely means a turning of the corner for general business. These observers believe that the depression has ended; that the President's proposal to the world governments on reparations constitutes the proverbial match necessary to light the flame, and that general business from now on will continue to register expansion and gather momentum as it goes, with the autumn witnessing a return of at least mild prosperity. Even those who take a more conservative view are of the opinion that certainly the worst of the long-drawn-out period of dull markets and declining prices has been seen, and that the trend in the months to come will be in the opposite direction. Surely, if sentiment has anything to do with matters, the industrial and business condition is due to record marked improvement, as the change for the better in sentiment in practically all circles has been nothing short of surprising during the last few days.

Demand for paper of nearly all kinds is still of restricted scope. There is moderate activity in some branches of the trade, but, by and large, the call for paper supplies is no broader than it was a month ago. This could hardly be expected at just this time because this is the dull period of the year in the paper market, and consumers and converters in general are holding aloof as buyers while in need of smaller amounts of paper than in busier seasons and while waiting to ascertain what their future requirements are likely to be before attempting to cover forward wants.

Routine business is developing in a consistent manner, and in fair volume. Nevertheless, demand is of very cautious character. Users of paper are not inclined to purchase supplies other than necessary to fill actual and immediate needs, and jobbers also are "laying low" with respect to filling their shelves and warehouses, evidently deeming it good business judgment to keep stocks as low as feasible.

On behalf of paper manufacturers, it must be said that a great majority are exerting all the effort possible to maintain contract prices, by which is meant that any shipments being made to customers who buy on contract are being billed at steady prices. As far as transient business is concerned, however, anything but a steady price condition prevails. Mills, and some in particular, are eager for current orders, and, in instances, prices are being cut, and pretty deep on occasions, to secure the business desired. It's almost anybody's guess just how low buyers in some cases are purchasing paper of some kinds, and buyers, realizing the situation existing, are not hesitating to "shop" around the market to buy at the lowest figures.

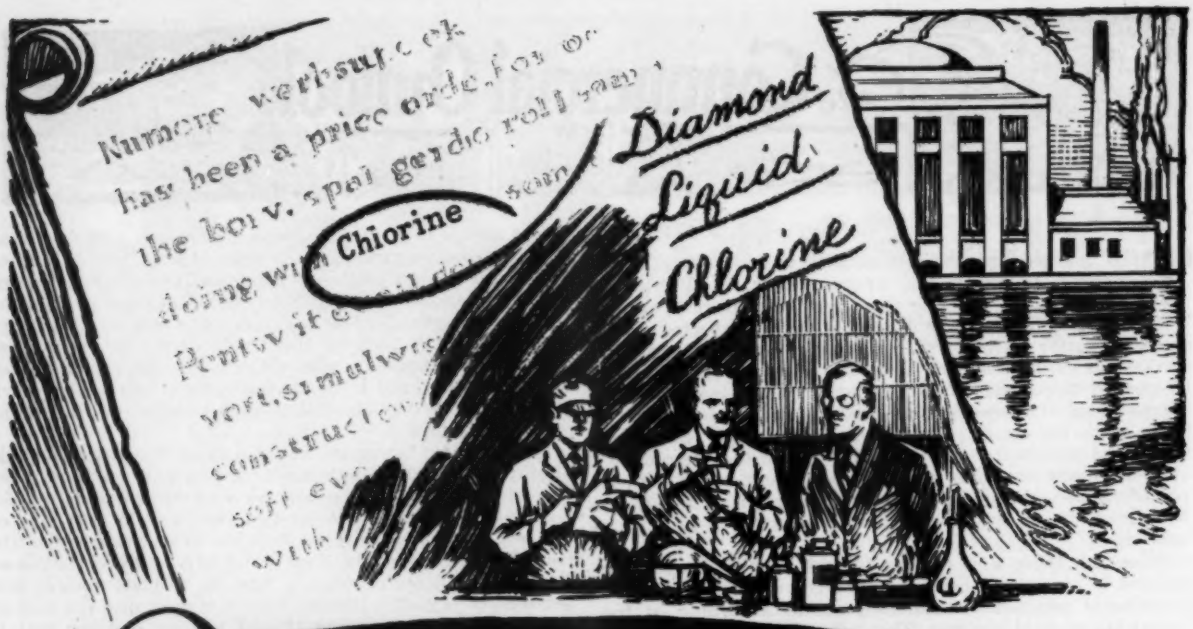
According to identical mill reports to the American Paper and Pulp Association from members and cooperating organizations, the daily average of total paper production in the United States in April last increased one per cent over that of March, but was ten per cent under April, 1930. A total of 458,578 tons of all grades of paper and board was produced in April, compared with 452,581 tons by identical mills in the preceding month. Shipments from mills during April aggregated 459,277 tons, or slightly in excess of the current output, and comparing with 451,225 tons shipped in March last. Stocks on hand at producing mills at the end of April totaled 269,777 tons, against 268,903 tons at the end of the preceding month.

Production of newsprint in the United States and Canada in May amounted to 303,809 net tons, or 64.8 per cent of the rated capacity of mills, compared with 308,288 tons or 65.7 per cent of capacity in April this year, and 355,774 tons or 76.9 per cent of capacity in May last year, according to the monthly summary of the News Print Service Bureau. Production by United States mills in May was 101,202 tons, or 68.8 per cent of capacity, against 102,450 tons or 69.6 per cent of capacity in April last and 118,093 tons or 80.4 per cent in May, 1930. Canadian production in May amounted to 202,607 tons or 63 per cent of capacity, contrasted with 205,838 tons or 64 per cent in April this year and 237,681 tons or 75.2 per cent in May a year ago.

Mills in the United States produced a total of 230,537 net tons of paperboard in April last, or at 69.9 per cent of capacity, compared with 226,011 tons or 68.6 per cent of capacity in the preceding month, and 245,167 tons or 73.9 per cent in April, 1930, according to the monthly statistical report on the board industry compiled by the U. S. Department of Commerce. Board production during the first four months of this year reached a total of 874,024 tons, showing an appreciable decrease compared with 931,504 tons produced in the corresponding period last year. New orders received by manufacturers in April called for 224,021 tons of board, against 222,511 tons in the preceding month, while unfilled orders held at the end of April were for a total of 45,541 tons, contrasted with 49,326 tons a month previously. Shipments of board from mills during April aggregated 227,806 tons, against 224,023 tons in March last, and stocks of board of all grades at mills at the end of April amounted to 81,784 tons, contrasted with 79,053 tons at the end of the preceding month.

Not many changes of a definite sort are reported in prices of the different classes of paper. Fine paper quotations are well maintained excepting in certain instances where manufacturers are revising price levels on a little lower basis. One of the foremost manufacturers of writing papers in the entire country ran half-page advertisements in the New York daily newspapers a few days ago emphasizing the cheapness of bond papers and pointing out that present prices of such papers are lower than in 15 years. Book papers are reported in moderate demand, and contract prices are sustained. There is, however, keen competition among mills for transient business, and prices on such orders frequently are being slashed with a vengeance. Wrapping papers are adhering to fairly steady quotational levels, with the market somewhat quieter than it was recently. Tissues also are quieter, and none too firm in price. Specialties of most kinds, and particularly those whose season is the summer, are in fair demand, and quotably maintained.

Signs point to moderate activity in boxboards, although most mills are not procuring anything like enough business to keep them busy. Paper box producers and other consumers are buying board in reserved fashion against immediate requirements, and most orders are of small volume. Prices are steady on a level of $30 a ton delivered in New York City for plain chip and filled newsboard.



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Papermaking Rags

Paper manufacturers continue to purchase rag stock on a strictly hand-to-mouth scale, and, judging by the quantities they are absorbing, are consuming but a very small percentage of the tonnage of rags usually used. The market is in the doldrums, from a business standpoint. The limited number of orders coming in from mills involve at best a small aggregate amount of rags, and dealers appear to have become so discouraged with the situation they are exerting a minimum of effort to accomplish sales, apparently having found through recent experience that it is useless to try to induce consumers to buy when not in want of supplies.

As concerns some grades of papermaking rags, there is no question whatever that a firm technical market condition prevails. Available stocks of these classes of material are at a low level, and what is more, incoming supplies are not commencing to measure up to what might be called normal volume. Prices are so low that indications are collectors the country over are refusing to gather rags; perhaps the rags are to be had, wherever they may be, but they are not being collected and brought to market. Other grades, however, are in good supply. Packers are holding certain kinds of rags, partly because they cannot sell them at present and partly because they feel market values must improve in time, and such grades probably would have to encounter considerable demand before prices would be affected.

Strange to say, it is the cheapest kinds of rags in the strongest technical market position. There are no sizable accumulations of roofing rags in the hands of dealers and packers. True enough, roofing felt manufacturers have for sometime past bought in a very cautious and restricted manner, yet they have taken practically all the roofing rags that have become available, and it is a fact that the supply condition is such that dealers in frequent instances are turning down mill orders to-day at the prices consumers are willing to grant because they have had difficulty completing such commitments as they have made to manufacturers. No. 1 classification roofing stock is bringing 75 to 80 cents per hundred pounds in the East, f.o.b. New York, and No. 2 packing 50 to 55 cents. Foreign roofing rags are on price levels of around 95 cents a hundred ex dock New York for linsey garments, and 70 to 75 cents for dark colored cottons.

In old cottons, little demand exists for white rags or thirds and blues, other than of purely routine character. Prices of these rags are largely nominal, with only buyers themselves able to ascertain definitely at just what prices they can buy in some quarters. Sales of repacked blues have been reported at as low as 1.75 cents a pound delivered paper mills. Whites of No. 1 repacked variety are quoted in the vicinity of 4.50 cents a pound, and No. 2 repacked at around 2.25 cents f.o.b. dealers' shipping points, but it is likely purchases are being effected at lower levels.

New cuttings are in spotty and limited demand, with a few descriptions scarce and others in ample supply. The call is principally for unbleached muslins, light silesias, khaki grades and No. 1 white shirt cuttings. No. 1 white shirt cuttings are reported available at seven cents per pound at shipping points, though many dealers ask beyond this price.

Imported rags are exceedingly dull. Papermakers are manifesting an almost total lack of buying interest, and with demand so slow, imports are at a very low point. Prices are anybody's guess while lacking an established market basis.

Average quotations f.o.b. shipping points and ex dock New York, some of which should be considered as strictly nominal, are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	6.75– 7.25
White shirt cuttings, No. 2	4.50– 5.00
Fancy shirt cuttings	3.25– 3.50
Washables, No. 1	3.25– 3.50
Unbleached muslins	7.00– 7.50
White lawns	6.00– 6.25
Overall cuttings, blue	5.00– 5.25
Black silesias	3.00– 3.25
Canton flannels, bleached	6.25– 6.50
Canton flannels, unbleached	5.25– 5.50
Shoe cuttings, bleached	5.50– 5.75
Shoe cuttings, unbleached	4.50– 4.75
Light silesias	5.00– 5.25
O. D. khaki cuttings	4.50– 4.75
Mixed khaki cuttings	3.75– 4.00
Corduroy cuttings	3.00– 3.25
Cottonade cuttings	2.75– 3.00
Linens, No. 1 white, foreign	7.50– 8.50
Light prints, foreign	3.00– 3.25
Old Stock—	
Whites, No. 1, repacked	4.25– 5.00
Whites, No. 2, repacked	2.00– 2.50
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.75– 2.00
Thirds and blues, rough	.75– 1.00
Thirds and blues, repacked	1.25– 1.50
Lace curtains	3.00– 3.25
Black stockings	2.50– 2.75
Cotton canvas, No. 1	3.25– 3.50
White cotton batting	1.10– 1.25
Roofing, No. 1 (cloth strippings)	.75– .85
Roofing, No. 2	.50– .60
Linsey garments, foreign	.95– 1.00
Dark colored cottons, foreign	.70– .75
Blue linens, foreign	2.75– 3.00
Gray linens, foreign	3.00– 3.25
White linens, foreign	5.00– 5.50
Light prints, extra foreign	2.00– 2.25

Rope and Bagging

A fairly good demand is reported for scrap bagging, but buying is by consumers other than paper manufacturers. Shredders are absorbing supplies in a steady manner, and prices of this article are holding quite firm. No. 1 scrap bagging, as used by tissue and other papermakers, is quoted around 1.35 cents per pound f.o.b. dealers' shipping points, and roofing bagging is selling at 50 to 55 cents per hundred pounds. Mills in some cases have paid a stiff premium for foreign roofing bagging, having granted up to 77½ cents a hundred pounds ex dock American Atlantic ports for such material, or some $5 to $6 a ton above the prices bid for domestic roofing bagging.

Old rope is still under neglect of consumers. Certain paper mills have placed orders with regular suppliers for small parcels, but there is no demand of any consequence and market values continue weak. The nominal price basis on No. 1 domestic old manila rope is 2.25 cents per pound f.o.b. shipping points, but there is small doubt that purchases have been made at less, while foreign old rope is on about the same price level as domestic.

F.o.b. shipping point and ex dock New York quotations follow:

Gunny, No. 1 domestic	1.60– 1.70
Gunny, No. 1 foreign	1.60– 1.70
Scrap bagging, No. 1	1.30– 1.40

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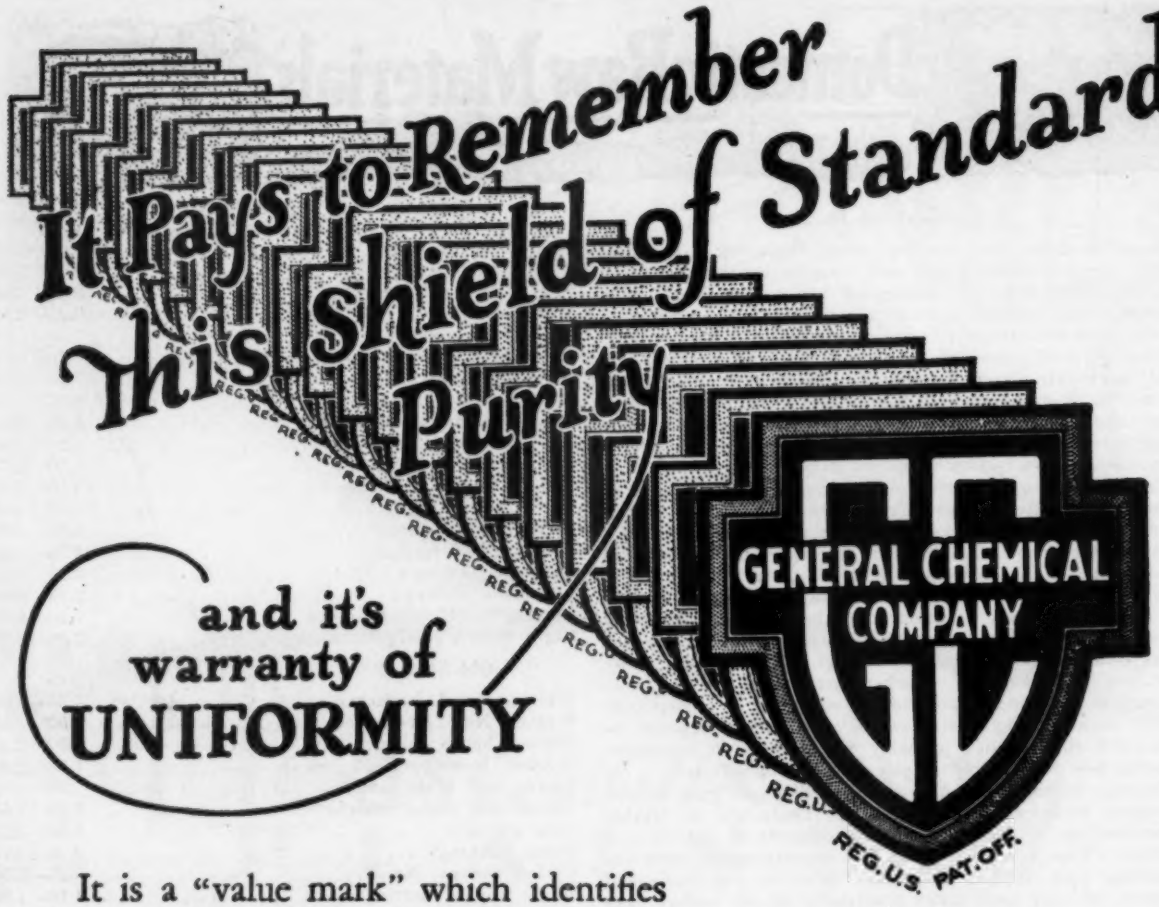

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362

Roofing bagging	.50– .60
Wool tares, heavy	1.65– 1.75
Wool tares, light	1.55– 1.65
Manila rope, No. 1 foreign	2.10– 2.25
Manila rope, No. 1 domestic	2.10– 2.25
Sisal strings	1.50– 1.75
Mixed strings	.70– .80

Old Paper

There seems every reason for the statement that the old paper market has witnessed the worst, and that prices not only have struck bottom but that some grades are now tending to stiffen in value. Curtailment of collections, reduction in the production of the higher descriptions, and a gradual decrease in available supplies have seemingly led to a firmer technical market situation, and although buyers are not finding it necessary in most cases to grant higher figures, at least they are having to pay ruling prices to procure the material wanted.

No. 1 mixed paper is decidedly steadier, with reports of sales in the East at 22½ and 25 cents per 100 pounds f.o.b. New York, and with prices several dollars a ton higher prevailing in the Middle West. Old kraft paper is selling freely on a price basis of around 1.15 cents a pound f.o.b. shipping points, ledger stock is bringing 65 cents to $1 a hundred, depending on the quality of the stock concerned, and most kinds of white shavings are moving fairly well at around 2.30 cents a pound for No. 1 hard and two cents for No. 1 soft white shavings. Books are quiet and inclining lower in price, and but limited demand is noted for old newspapers.

The following quotations f.o.b. shipping points, some of which are nominal, are named by leading dealers:

	New York and Chicago
Hard white shavings, No. 1	2.20– 2.65
Hard white shavings, No. 2	2.00– 2.25
Soft white savings	1.90– 2.25
Colored shavings	.50– .60
Heavy book, No. 1	.65– .75
Crumpled book, No. 1	.50– .60
Ledger stock	.65– 1.00
Kraft No. 1	1.10– 1.20
New kraft cuttings	1.50– 1.75
White blank news	1.60– 1.75
Manilas, No. 1	.40– .60
Manilas, container	.30– .35
Folded news	.25– .45
Sulphite mill wrappings	.50– .60
Old corrugated boxes	.35– .45
New corrugated box cuttings	.40– .50
Mixed paper, No. 1	.22½– .35
Common paper	(Nominal)

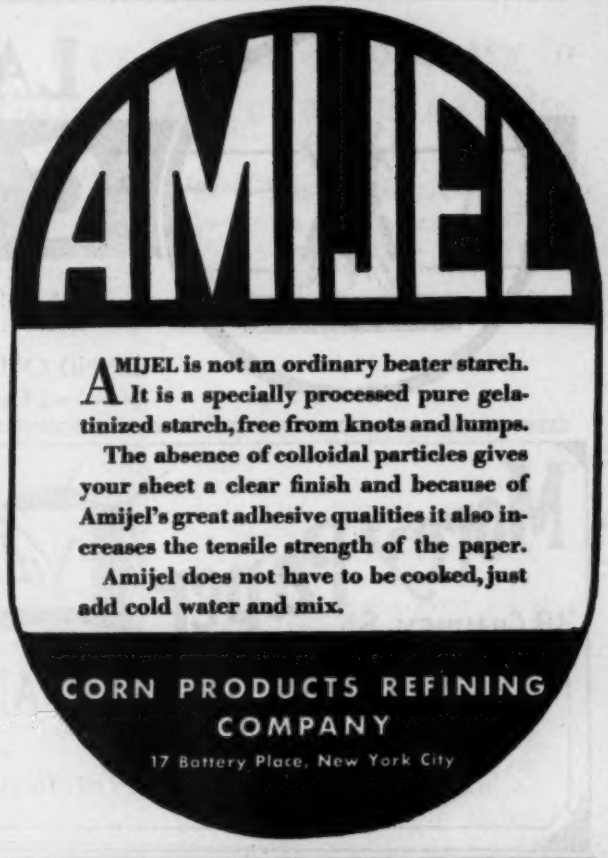
Pulpwood

The market for pulpwood is lacking in feature, and most of the activity now observable revolves around shipments against contracts. Current demand is quiet, yet quoted rates are reported essentially unchanged.

During the first five months of this year exports of pulpwood from Canada amounted to 311,237 cords, valued at $2,809,151, practically all of which came to the United States, compared with 510,347 cords of a value of $4,780,208 exported from the Dominion in the same period of 1930.

Mechanical Pulp

Offered supplies of mechanical pulp apparently are more than ample to cover consumers' wants, and there is some pressure to sell. The tone of prices is none too steady and yet no further downtrend in the market has been recorded. Users evidently are getting along on contract commitments without having to resort to current purchases, and transient demand is slow at best. Canadian producers are reported accepting $23 a ton f.o.b. pulp mills for prime groundwood, which is equivalent to around $30 delivered paper mills in the United States, while domestic grinders are quoting in the vicinity of $26 per ton at producing plants. Possibly in exceptional cases buyers are succeeding in acquiring some supplies at below these figures.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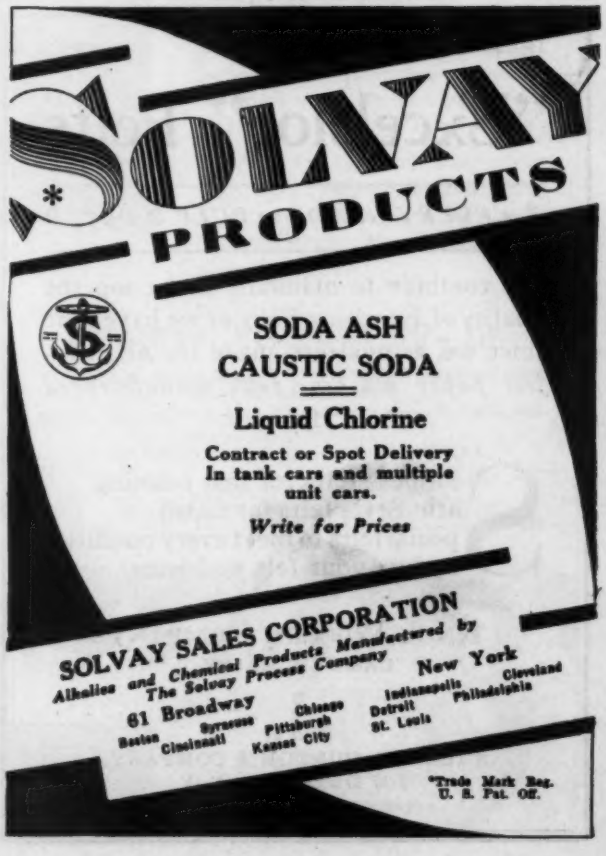
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WHAT would a strong light show if you put it under the seam used on all Eastwood "Perfection" Fourdrinier Wires?

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Compare the Eastwood seam shown above with the old fashioned seams. Its superiority as to open suction area and simplicity is at once apparent.

This seam is now standard on all our Fourdrinier wires, from those for 10 lb. tissue up to high speed newsprint.

EASTWOOD CORPORATION
Established 1877, Belleville, N. J.
"American Paper Made on American Wires"

EASTWOOD
"Perfection" WIRES
"Perfection" VALVES

Production of groundwood in the United States in April amounted to 88,685 tons, compared with 75,154 tons produced by identical mills in the preceding month, according to American Paper and Pulp Association statistics. Producing mills used 74,108 tons in April, against 70,383 tons in March, and shipped out 1,886 tons, contrasted with 1,912 tons in the preceding month, while mill stocks at the end of April totaled 60,535 tons, against 48,190 tons at the end of March.

Chemical Pulp

Not much demand is reported currently for domestic chemical wood pulp. There is, of course, a certain amount of routine business developing, and also a steady movement of supplies into consuming channels against contracts, but the market is in a quiet condition and is altogether on the buyer's side. It is rather difficult to arrive at definite price levels. As a matter of fact, quotations are on such wide ranges, depending as they do on various circumstances—location of producing or consuming mills, quality of the pulp involved, the eagerness of sellers for orders, etc.—that prices show a broad difference. Bleached sulphite of Pacific Coast origin has been reported sold at 2.50 cents and less per pound ex dock Atlantic seaboard, whereas other qualities of such pulp are quoted far in excess of this price or up around four cents and even higher. News grade sulphite is about 2.25 cents a pound at pulp mills, book sulphite around 2.40 cents, bleached soda pulp three cents delivered paper mills, and domestic kraft anywhere from 1.80 cents to 2.75 cents a pound.

Output of chemical pulp in the United States during April amounted to 100,738 tons, compared with 105,277 tons in the preceding month, according to identical mill reports to the American Paper and Pulp Association. Stocks on hand at producing mills at the end of April were 20,161 tons, against 22,273 tons a month previously.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	2.50– 4.75
Easy bleaching sulphite	2.40– 2.65
Unbleached sulphite, No. 1 strong (news grade)	2.15– 2.35
Unbleached sulphite, No. 1 book	2.25– 2.50
Soda pulp bleached (delivered)	2.90– 3.15
Mitscherlich, unbleached	2.75– 3.00
Kraft	1.80– 2.75
Screenings, refined	(Nominal)

Chemicals

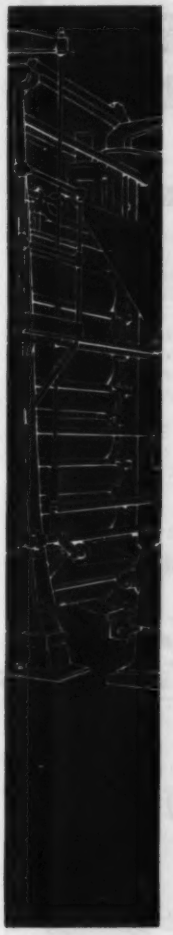
Casein prices have eased to where domestic standard ground casein is reported available at seven cents per pound, and finely ground at 8.50 cents. Bleaching powder holds to a steady quotable level, and no changes are noted in prices of soda ash and caustic soda. Gum rosin is slightly down in price at from 5.60 cents upwards per pound. The movement of chemicals to paper and pulp mills is principally on contracts, current demand being of narrow compass.

Average quotations are as follows:

Alum, lump ammonia	3.50– 3.75
Alum, lump starch	3.75– 4.00
Blanc fixe, powdered	3.75– 4.00
Bleaching power	2.00– 2.35
Brimstone (long ton, at mine)	18.00–20.00
Casein (duty paid)	7.00–10.00
Caustic soda, solid, spot delivery	2.50– 2.55
China clay, domestic washed	7.00–11.00
China clay, foreign	13.00–21.00
Rosin	5.60– 6.25
Satin white	2.00– 2.25
Soda ash, 58 per cent light (bags)	1.15– 1.25
Starch, papermakers', in bags	2.67–
Talc (ton)	16.00–18.00

Northern Equipment Co., Erie, Pa., announces the appointment of Joseph W. Eshelman as representative for its water regulators, pump governors, valves and allied equipment in Eastern Tennessee. This is an extension of the territory formerly served by Mr. Eshelman from his offices in the Webb-Crawford Bldg., Birmingham, Ala.

For improved opacity in filled and coated stocks



The paper industry is showing increasing interest in the use of Titanox-B (Barium Base) as a means of improving opacity in paper stocks.

Titanox-B is widely known in the paint, rubber, leather and ink industries for its exceptional whiteness, high tinting strength, chemical inertness, unusual dispersing qualities, and moderately *high* bulking value. In particle size, Titanox-B is one of the finest of all white pigments. These properties should help paper manufacturers solve some of their processing problems—depending on the process or the type of stock produced.

Titanox-B is a true, composite, opaque pigment . . . a white, fine, uniform powder consisting of Titanium Oxide precipitated upon and coalesced with barium sulphate (blanc fixe).

In some cases the use of Pure Titanium Oxide (TiO_2) — another of our products—in combination with china clay is desirable.

Write for further information regarding Titanox-B and Pure Titanium Oxide—prices, chemical properties, etc. Address our nearest branch.

TITANIUM PIGMENT CO., Inc.

Manufacturers of

TITANOX-B (Barium Base) TITANOX-C (Calcium Base)

PURE TITANIUM OXIDE

60 John St., New York, N.Y. Carondelet Station, St. Louis, Mo.

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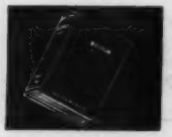
2240 24th Street. San Francisco, Calif.

Canadian Distributor:

WILSON, PATERSON, GIFFORD, LTD.

101 Murray Street, Montreal 132 St. Helen's Ave., Toronto



First aid for felts

IT is remarkable what *thorough* cleaning will do for felts. Softer and more absorbent than when new, felts thoroughly washed last longer, because they fill up less rapidly and require less frequent cleaning.

That is why so many paper mills wash felts the Oakite way. Absolutely safe, this effective cleaner loosens all sizing and foreign matter and then rinses completely away leaving no slippery gummy deposits.

Write and ask to have our nearest Service Man show you how Oakite cuts washing time, does a better job and keeps down felt replacement costs. No obligation.

Manufactured only by
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK., N. Y.

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TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

Pneumatic Package Press

Triple Shaft Toilet Winder

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Paper Converting Equipment

Machinery from Hudson-Sharp is in use in converting mills throughout the United States with installations in many foreign mills.

Standard designs are obtainable for general purposes but special purpose machines will be designed by our engineers to efficiently meet any special mechanical problem at hand.

Circulars and catalogue of our line are obtainable upon application.

Napkin Embosser and Printer

Automatic Core Cutter

HS MACHINE CO.

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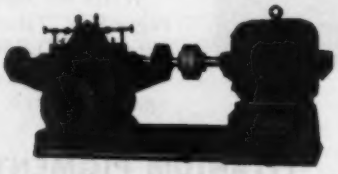
Manufacturers and Designers of Special Machinery

LAWRENCE "VORTEX" CENTRIFUGAL PUMPS

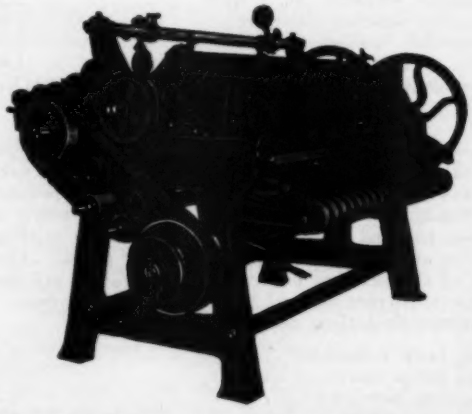


A heavier, more rugged pump clear through

From suction end to discharge you will find LAWRENCE "VORTEX" PUMPS built to stand up under the severe conditions of the paper industry. Compare it, part for part, with pumps you have used in the past. Unless you are already a LAWRENCE "VORTEX" user, you will be strongly impressed by the fact that each part is heavier, more rugged, and is designed and built equal to the job in your plant. A pump for every purpose, for pumping any liquid—pulp stock, white water, acids, etc.

Write for Bulletins.

LAWRENCE PUMP & ENGINE CO.
P. O. Box 70 LAWRENCE, MASS.



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PATENT TOP SLITTERS

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New Papers

Writing—	
White rag	15– 40
White sulphite	7– 30
Colored rag	14– 40
Colored sulphite	7– 30
Ledger—	
White rag	15– 40
White sulphite	10– 30
Colored sulphite	10– 30
Colored rag	14– 40
Bond—	
White rag	15– 40
White sulphite	7– 30
Colored sulphite	7– 30
Colored rag	14– 40
Book—	
No. 1 S. & S. C.	5.25– 8.00
Machine finished	5.00– 8.00
English finish	5.00– 8.00
Coated and enameled	6.75–10.00
Lithograph, M. F.	7.00–11.50
Newsprint—	
Rolls, contract, per ton, delivered New York	57.00–
Rolls, transient, per ton, delivered New York	57.00–
Sheets, per ton, delivered New York	62.00–
Sideruns, per ton, delivered New York	42.00–46.00
Cover stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.65– .70
No. 2 white, 40x36	.60– .70
No. 1 Manila, 24x36	.60– .70
Kraft	.75– .85
Wrapping—	
No. 1 kraft	4.25– 5.25
No. 2 kraft	3.50– 4.00
Southern kraft	3.50– 4.00

Boards—	New York and Chicago
Solid news	35.00–40.00
Straw	40.00–45.00
Plain chip	30.00–32.50
White coated chip	47.50–50.00
Manila coated chip	40.00–45.00
Binders' board	65.00–70.00

Hall Printing Co. Receives Large Printing Order

The W. F. Hall Printing Company has received a ten year contract from Montgomery Ward & Co. for the printing of the major portion of the latter company's catalogue and sale book requirements, Frank R. Warren, president of Hall Printing has announced.

This contract, which is one of the largest ever awarded for catalogue printing, involves during its term an aggregate sum of over $20,000,000. It represents an increase in volume of around 30 per cent over the work formerly done by the W. F. Hall Printing Company for Montgomery Ward & Co.

Tonawanda Mill Sold to International

International Paper Company has purchased the Tonawanda book paper mill of the **Chicago Tribune**, it was announced June 22, for about $4,000,000, the payments to be made over a term of years. Under the agreement, the International Paper Company will supply until 1942 all the rotogravure paper used by the **Chicago Tribune**, as well as the **Daily News**, New York's picture newspaper, and all the newsprint paper used by the **Daily News** and the **Detroit Mirror**, recently acquired by the Tribune Company of Chicago.

These papers are largest users of rotogravure paper in the United States and the **Daily News** uses more newsprint than any other newspaper in the United States. The total sale of paper under the contracts will exceed $115,000,000.

Max Annenberg and Roy C. Holliss represented the **Chicago Tribune** and the **Daily News** in these transactions. The International Paper Company was represented by W. N. Hurlbut.

The Tonawanda mill, situated in New York State on deep water about 15 miles from Niagara Falls, has a capacity of 40,000 tons a year and was built in 1926 by the Tribune Company of Chicago to supply the book paper used by **Liberty** magazine, which was sold recently to the MacFadden Publications.

International Paper Company book paper mills in the United States now have a capacity of 150,000 tons of book paper a year, making the company one of the largest book paper producers in the country. It is also the largest producer of newsprint and kraft wrapping paper in the world. International Paper Company has supplied the **Daily News** with its newsprint since the paper was started ten years ago. The prices for paper under the contract will be International Paper Company standard prices as announced recently by the company.

R. H. Diament Leaves Scott Paper Co.

R. H. Diament, personnel director of Scott Paper Co., Chester, Pa., has resigned his position and will be succeeded by Ralph R. Rhoads, secretary of the corporation.

Mr. Diament has been with the company for 20 years, first in the purchasing department and for the last eight years as personnel director. He is well-known in the paper industry and is a member of both the Superintendents Association and T.A.P.P.I. Mr. Diament plans to take an extended vacation, making a tour through the West.

Mr. Beveridge Sails for London

James Beveridge, author of the **Paper Makers' Pocket Book**, who makes his home in Richmond, Va., sailed on the Carmania of the Cunard line for London on Tuesday, June 30, to attend the annual meeting of the Society of Chemical Industry, which convenes there July 12—26. Mr. Beveridge is a life member of the society, having been connected with it since its inception. He is one of perhaps 40 surviving charter members of this international organization. Mr. Beveridge was born in Fifeshire, Scotland, and has devoted a lifetime to the pulp and paper industry, chiefly as a consultant in the erection of soda and kraft mills.

The Beveridge Paper Company, Indianapolis, Ind., manufacturers of bristol and other high-grade cardboard specialties, will be represented in Philadelphia by Arthur B. Sherrill, with offices in the Lafayette Building, 5th and Chestnut streets.

CHEMICAL AND MECHANICAL PULP

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Kellner-Partington Paper Pulp Co. Ltd.
Sarpsborg, Norway—Edsvalla, Sweden
Hallein and Villach, Austria

UNBLEACHED SULPHITE

Cellulosefabriks A.—G., Bratislava, Cecho-Slovakei
Bergvik och Ala Nya Aktiebolag, Söderhamm, Sweden
Svanö Aktiebolag, Svanö, Sweden
Aktieselskabet Greaker Cellulosefabrik, Greaker Norway

KRAFT PULP

Nensjö Cellulosa A.—B., Sprängsviken, Sweden
Bergvik och Ala Nya Aktiebolag, Söderhamm, Sweden
Munksunds Aktiebolag, Munksund, Sweden
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CANADIAN KRAFT, LTD.

THREE RIVERS, CANADA

Sulphite Pulp—Paper and Board
J. & J. Rogers Co.
Ausable Forks, N. Y.

Seagull Bleached Soda Pulp
Canadian Cellulose Co.
Cornwall, Ont., Canada

Selling Agents **THE PULP & PAPER TRADING CO.**
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"HAFSLUND BEAR"
Bleached Sulphite

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Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
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Fresh Monthly Shipments—No Closed Winter Season

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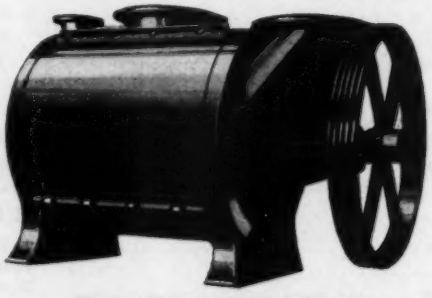
BUY NO PULP SCREENS

Until you've seen the Sensation of the Pulp and Paper Industry



NEW APMEW PULP SCREEN

Buy no Pulp Screens until you have seen the NEW APMEW PULP SCREENS, built in two sizes. You'll marvel at the downright cleverness of them. You'll be amazed at their organized features. You'll want the savings in your mill that they are producing for many users. And you'll gladly pay the moderate price asked for them. Your people will thank you for a better product and for effecting unusual savings.

If you do not know all about the NEW APMEW PULP SCREENS, write now for full information.

AMERICAN PAPER MACHINERY AND ENGINEERING WORKS
Glens Falls, New York

EXPORTS

There was a slight decline in the value of exports of paper and paper products from the United States during the month of April as compared with shipments in the preceding month, and a larger decline as contrasted with exports in the similar month last year. Exportations in April last reached a total value of $2,044,606, against shipments valued at $2,090,714 in March this year and $2,859,029 in April, 1930, according to official statistics compiled by the U. S. Department of Commerce. Exports during the first four months of this year were valued at $7,995,789, registering an appreciable decrease as compared with $11,481,524 in the corresponding period a year ago.

Exports of newsprint paper in April amounted to 1,711,727 pounds, valued at $55,753, against 2,046,119 pounds of a declared value of $98,287 in the same month last year. Export shipments of uncoated book paper in April were 1,836,952 pounds of a value of $109,887, compared with 3,754,113 pounds of a value of $250,236 in the similar month a year ago, while wrapping paper exports fell from 4,276,256 pounds of a value of $242,567 in April, 1930, to 3,568,260 pounds of a value of $133,960 in April this year. Writing paper exports were valued at $153,744 last April, contrasted with $202,328 in the same month last year, while tissue paper shipments reached a value of $52,311, showing a decline from $79,074 in April, 1930, and sheathing and building paper exports dropped from a value of $71,788 in April a year ago to $49,185 in the similar month this year.

Boxboard exports in April amounted in value to $91,853, contrasted with $117,344 in the same month last year, and other paperboard exports reached a value of $114,980, against $140,597 in April, 1930. Paper bag exports rose in value from $55,611 in April a year ago to $67,402 in the same month of the current year.

IMPORTS

Wood Pulp

Reports agree that the market for imported wood pulp is slow. Most paper and board manufacturers are not in much of a purchasing mood; apparently they are more concerned with matters in their finished goods markets than with augmenting their stocks or commitments of raw material, and other than a certain amount of routine buying, and occasional flare-ups of demand of restricted scope from certain consuming quarters, not much life is observed in the market currently.

However, foreign pulps continue to move across the Atlantic and into consuming channels in the United States in a fair way against contracts and orders placed by papermakers sometime ago. Importations are on the decline, but, everything considered, it would appear as if there is a fair movement of supplies, and that, in comparison with some other imported articles, imports of wood pulp into this country are holding up relatively well.

There are several bullish factors in the situation, but they are having scant influence on the market at present, owing to the fact that the market is still altogether a buyer's market, with available supplies easily ample, and with sellers seemingly more concerned about orders than are consumers about buying. The lockout in the pulp mills of Norway has led to almost a complete stoppage of shipments of chemical pulp from that country, either to the United States or to any other consuming nation, and the removal of the Norwegian tonnage of pulp from the market doubtless would wage a big influence were conditions different than they happen to be today. Also, the European producers are contemplating a further reduction in sulphite production; that is, to increase the 15 per cent curtailment already in effect, and present prospects are the proposal to further restrict output will be adopted. Another development is that foreign pulp manufacturers are becoming much firmer in their refusal to accept any lower prices; evidently they are growing somewhat tired of producing and marketing pulp at a loss to themselves, and New York importers and agents report that it is now a common occurrence for their principals in Europe to flatly turn down bids on pulp which fail to measure up to their ideas of prevailing market values.

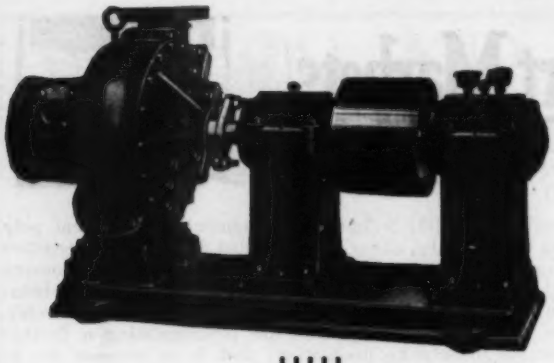
Strong unbleached sulphite is quoted generally at 2 cents per pound ex dock American Atlantic ports for prime grades, and some mill brands are held at well above this price, though on the other hand it is said that purchases have been accomplished at a shade under the 2-cent level. Foreign bleached sulphite of prime quality is available at from 2.60 cents upwards a pound on the dock Atlantic seaboard, and prices range as high as 4 to 4.25 cents for some brands of such pulp. Prime easy bleaching sulphite is quoted around 2.30 cents, and prime standard Swedish kraft is mostly priced at 1.50 cents, though sales of kraft have been recorded at slightly less, or down to 1.40 cents. Prime imported groundwood is $26 to $27 per short ton ex dock American Atlantic ports.

April importations of chemical wood pulp into the United States amounted to 69,213 long tons, valued at $3,552,457, according to official U. S. Department of Commerce statistics, registering a decline as compared with 72,946 tons of a value of $3,952,466 imported in the preceding month. The April imports brought the total for the first four months of this year up to 392,889 long tons, against 486,530 tons in the corresponding period last year. Groundwood imports in April were 20,657 long tons, of a declared value of $493,788, compared with 13,082 tons of a value of $303,962 in the preceding month, and making a total for the first four months of 1931 of 60,570 tons, against 102,877 tons in the similar time a year ago.

Current market quotations ex dock New York, and receipts at the port of New York during June, 1931, these data being taken from manifests of vessels reaching that port last month, follow:

Bleached sulphite, No. 1	2.60– 4.25
Unbleached sulphite, strong No. 1	2.00– 2.25
Unbleached sulphite, No. 2	1.90– 2.10
Easy bleaching sulphite	2.25– 2.40
Mitscherlich, unbleached, genuine	2.60– 2.80
Mitscherlich, unbleached, ordinary	2.10– 2.25
Kraft, standard Swedish	1.40– 1.65
Groundwood, per ton (dry)	26.00–27.00

Castle & Overton, Inc., 947 bls. from Rotterdam and 4,001 Hamburg; Lagerloef Trading Co., 600 bls. from Wiborg, 3,720 Hango, 1,515 Helsingfors, 155 Mantyluoto, 1,975 Raumo and 662 Tolkis; M. Gottesman & Co., 2,400 bls. from Sibenik, 550 Rotterdam and 2,070 Gothenburg; Pagel, Horton & Co., 9,875 bls. from Gefle; Atterbury Bros., 150 bls. from Stockholm and 330 Hango; Guaranty Trust Co., 1,331 bls. from Gothenburg and 307 Hamburg; J. Andersen & Co., 125 bls. from Gothenburg and 3,000 Hernosand; Russell McCandless, 1,358 bls. from Gothenburg; Bulkley, Dunton & Co., 9,375 bls. from Iggesund, 500 Gefle, 6,145 Soderhamn and 900 Gothenburg; Bankers Trust Co., 3,375 bls. from Iggesund; Stora Kopparberg Corp., 1,150 bls. from Skutskar; Johaneson, Wales & Sparre, 3,125 bls. from Swedish ports, 750 Svartvik, 150 Norrkoeping and 3,625 Soraker; Parsons & Whittemore, 360 bls. from Gothenburg and 100 Hamburg; Brown Bros. & Co., 1,583 bls. from Hamburg; E. M. Sergeant Co., 300 bls. from Oslo and 449 Gothen-



STOCK PUMP ECONOMIES:

The nearest approach to profits anywhere these days seems to be lowered cost for what production there is . . . how true this is in paper and pulp mills!

We can contribute to lowered production costs in one important regard at least: Lowered *Power* costs based on Stock Pump Economies—*Frederick Stock Pumps on any drive take less power!*

The savings, fractional at first, build up enormously at last. Moreover, the fact that Frederick Pumps give continuous service and freedom from breakdowns cannot be ignored. It helps explain why the list of Frederick users already reads like a blue book of the industry . . . Because Stock Pump Economies take the most immediate and practical approach to profits.

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Kalamazoo tanks are made of best obtainable tank woods, built right—guaranteed tight.
Sixty years experience building Blow Pits, Acid Tanks, Stuff Chests, Agitators, etc., for the Paper Trade.
See our condensed catalog in Paper & Pulp Mill Catalog, Chemical Engineering or Sweets.
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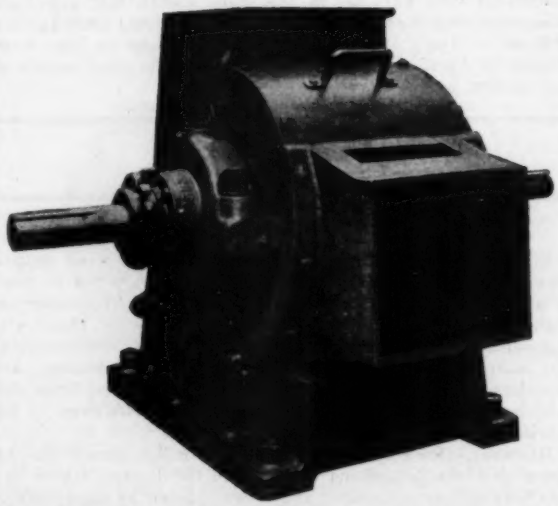
KALAMAZOO TANK & SILO CO., Kalamazoo, Mich.

A NEW RECHIPPER—TYPE "A"



Featuring: Low Price—Low Power—Low Maintenance—Chip Size Control—Roller Bearings. Spout opening 10½"x11". Capacity 1 to 2 tons per hour.
Other Chippers and Shredders with spout openings up to 54" wide.

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Builders of Machinery since 1854

burg; Irving Trust Co., 1,400 bls. from Bremen; Ekman & Co., 265 bls. from Hamburg; Perkins-Goodwin Co., 600 bls. from Sundsvall; E. J. Keller Co., 734 bls. from Hamburg; Order, 390 bls. from Hango, 3,385 Kotka, 8,276 Chandler, Que., 5,000 Swedish ports, 497 Hamburg, 3,250 Sundsvall, and 3,750 Hernosand.

Paper Stock

The United States imported 14,872,805 pounds of papermaking rags, valued at $178,986, during April, making a total of 42,607,342 pounds of a declared value of $571,873 for the first four months of this year, compared with 135,455,029 pounds of value of $2,905,340 in the corresponding period of 1930, according to official U. S. Department of Commerce statistics. Imports of all other paper stock excepting wood pulp in April amounted to 8,204,592 pounds of a value of $131,261, bringing the total for the first months of the current year to 38,589,920 pounds, valued at $585,281, against 89,198,652 pounds of a value of $1,369,045 a year ago in the similar time.

Imports of rags and other paper stock last month continued on a small scale, taking the receipts through the port of New York as a criterion. Arrivals at that port in June, these data being taken from manifests of vessels reaching New York during the month and therefore unofficial, were as follows:

Old Rope—International Purchasing Co., 56 coils; Banca Commerciale Italiana Trust Co., 152 coils and 57 bls.; Brown Bros. & Co., 293 bls. and 58 coils; Baring Bros. & Co., 110 coils; Castle & Overton, 14 coils; Tupman, Thurlow & Co., 44 bls.; S. Birkenstein & Sons, 29 coils; E. J. Keller Co., 155 coils; Order, 58 coils.

Old Bagging—Irving Trust Co., 140 bls.; Victor Galaup, Inc., 287 bls.; E. J. Keller Co., 203 bls.; Banca Commerciale Italiana Trust Co., 496 bls.; R. F. Downing & Co., 127 bls.; Darmstadt, Scott & Courtney, 161 bls.; International Trust Co., 313 bls.; First National Bank of Boston, 221 bls.; Order, 361 bls.

Rags—Darmstadt, Scott & Courtney, 163 bls.; Castle & Overton, 417 bls.; E. J. Keller Co., 228 bls.; Victor Galaup, Inc., 149 bls.; E. Butterworth & Co., 37 bls.; J. Reiss & Co., 3 bls.; Katzenstein & Keene, 265 bls.; G. Schuster, 21 bls.; Harmon G. Lichtenstein, 92 bls.; M. Steinberg & Son, 60 bls.; W. A. Wood, 20 bls.; International Trust Co., 265 bls.; Banca Commerciale Italiana Trust Co., 82 bls.; Chemical Bank & Trust Co., 39 bls.; A. W. Fenton, Inc., 165 bls.; Brown Bros. & Co., 59 bls.; R. F. Downing & Co., 98 bls.; Order, 632 bls.

Miscellaneous Paper Stock—Baring Bros. & Co., 64 bls.; J. Cohen & Sons, 28 bls.; Banca Commerciale Italiana Trust Co., 154 bls.; Darmstadt, Scott & Courtney, 105 bls.; Milton Snedeker Corp., 296 bls.; E. J. Keller Co., 57 bls.; Order, 205 bls.

Paper

Importations of paper into the United States during the month of April, 1931, reached a value of $11,011,597, according to official figures issued by the U. S. Department of Commerce, showing an increase over the imports of a value of $10,732,305 in the preceding month, but a decline contrasted with imports valued at $12,385,763 in the similar month last year. Imports during the first four months of this year totaled in value $42,535,124, against $48,514,256 in the corresponding period of last year.

Paper imports last month were comparatively light, judging from arrivals through the port of New York. Receipts of all kinds of paper at that port during June, these data being taken from manifests of arriving steamers and therefore unofficial, were as follows:

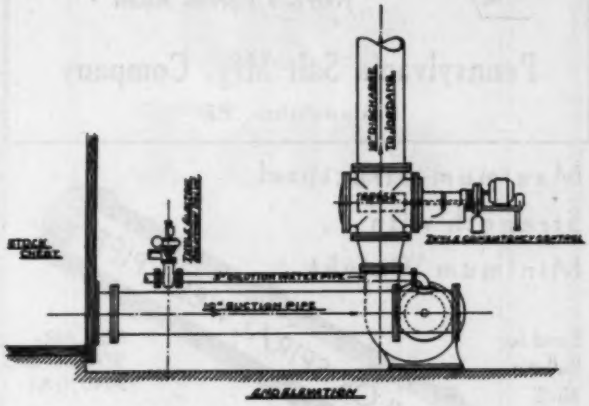
Printing—Bank of Montreal, 9,392 reels from Corner Brook; Perkins-Goodwin Co., 928 reels from Hamburg and 547 reels Bremen; E. Dietzgen & Co., 121 cs. from Rotterdam and 131 cs. Hamburg; Keuffel & Esser Co., 25 cs. and 28 rolls from Hamburg; W. H. Bell, 9,552 rolls from Liverpool, N. S.; J. Henschel & Co., 11 cs. from Hamburg; Parsons & Whittemore, 43 rolls from Sundsvall and 84 reels Gothenburg; International Paper Co., 12,318 rolls from Dalhousie, N. B.; P. C. Zuhlke, 7 cs. from Antwerp; Stora Kopparberg Corp., 114 reels from Gothenburg; C. Steiner, 7 cs. from Antwerp; Baldwin Paper Co., 176 reels from Hamburg; Public National Bank, 5 cs. from Marseilles; Lunham & Reeve, 306 reels from Hango; Order, 1,355 reels from Kotka, 183 reels Southampton, 1,184 reels Hamburg, 5 bls. Gothenburg, and 1,749 reels and 58 cs. Bremen.

Wrapping—J. P. Heffernan Paper Co., 85 cs. from Bilboa; Borregaard Co., 214 reels and 72 bls. from Gothenburg; Standard Products Corp., 5 cs. from Antwerp; H. J. Heinz, 6 bls. from Hamburg; E. Dietzgen & Co., 53 cs. from Rotterdam; Majestic Paper and Twine Co., 21 bls. from Gothenburg; Lunham & Reeve, 190 rolls and 93 bls. from Gothenburg; Sylvania Industrial Corp., 2 cs. from Antwerp; F. C. Strype, 9 cs. from Antwerp; Chase National Bank 20 cs. from Antwerp; P. H. Petry & Co., 50 bls. and 88 reels from Gothenburg; Order, 2 bls. from Gothenburg.

Cigarette—American Tobacco Co., 1,622 cs. from Bordeaux and 286 cs. Havre; Standard Products Corp., 185 cs. from Havre; Champagne Paper Corp., 408 cs. from Havre; M. Spiegel & Sons, 41 bls. from Genoa; R. J. Reynolds Tobacco Co., 2 cs. from Havre; G. A. Henshaw & Sons, 23 cs. from Southampton and 15 cs. Havre; P. J. Schweitzer, Inc., 67 cs. from Marseilles and 4 cs. Havre; H. H. Strauss, 10 cs. from Havre; Madison Bank, 19 cs. from Southampton; DeMauduit Paper Corp., 1,241 cs. from St. Nazaire.

Writing—Distinctive Writing Paper Co., 2 cs. from Havre; Mar-

CONTROLLING UNBEATEN SULPHITE STOCK IN WELL KNOWN NEW YORK MILL



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Automatic Steam Regulator
FOR
Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

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shall Field & Co., 6 cs. from Havre; Guibont Freres & Co., 4 cs. from Havre; Order, 21 cs. from Southampton.

Filter—H. Reeve Angel & Co., 88 cs. from Southampton and 20 cs. London; C. Sleicher & Scholl Co., 11 cs. from Hamburg; G. Luecders & Co., 12 bls. from Southampton; R. U. Delapenha, 2 cs. from Marseilles; C. Ullman, 2 bls. from Rotterdam; J. Manheimer, 132 bls. from Southampton; E. Fougera & Co., 46 cs. from Southampton; Gerhard & Hey, 9 cs. from Southampton.

Tissue—F. C. Strype, 3 cs. from Genoa.

Drawing—Keuffel & Esser Co., 10 cs. from Rotterdam, 74 cs. Hamburg and 5 cs. Southampton; H. Reeve Angel & Co., 5 cs. from London.

Photo—J. H. Schroder Banking Corp., 21 cs. from Bremen; Globe Shipping Co., 101 cs. from Bremen and 4 cs. Antwerp; Gevaert Co. of America, 146 cs. from Antwerp; J. J. Gavin & Co., 6 cs. from Southampton; Order, 2 cs. from Southampton.

Hanging—F. J. Emmerich & Co., 15 bls. from Hamburg and 2 bls. Liverpool; A. C. Dodman, Jr., Inc., 2 bls. from Liverpool; R. F. Downing & Co., 2 bls. from Hamburg, 9 bls. Kobe and 5 cs. Southampton; Bush Service Corp., 7 cs. from London; J. E. Bernard & Co., 3 bls. from Southampton; Irving Trust Co., 13 cs. from Hamburg; Order, 3 cs. from Antwerp.

Board—H. Fuchs & Son, 85 bls. from Gothenburg; Lagerloef Trading Co., 301 bls. from Kotka and 266 bls. Hango; Chatham & Phenix National Bank, 14 bls. from Gothenburg; Order, 41 bls. from Hamburg.

Miscellaneous—Whiting-Patterson Co., 11 bls. from Southampton; Hensel, Bruckman & Lorbacher, 51 cs. from Hamburg; W. Bersch, 6 cs. from Hamburg; Van Oppen & Co., 25 cs. from Genoa; Borden & Riley Paper Co., 45 cs. from Rotterdam; G. A. Vedovi & Co., 16 bls. from Genoa; Bendix Paper Co., 5 cs. from Hamburg; C. L. Voorhees, 4 cs. from Yokohama; H. Reeve Angel & Co., 5 cs. from Yokohama and 4 cs. Genoa; Keller-Dorian Paper Co., 18 cs. from Havre and 6 cs. Marseilles; Bernhard Meiners, 20 cs. from Manila; B. F. Drakenfeld & Co., 30 cs. from Liverpool; H. Fuchs & Sons, 7 cs. from Rotterdam; F. L. Kraemer & Co., 30 cs. from Bremen; Corn Exchange Bank, 25 cs. from Kobe; C. Bruening, 105 reels from Rotterdam; Walker Goulard Plehn Co., 5 cs. from Rotterdam; J. Romer, 8 cs. from Kobe; W. A. Foster, 5 cs. from London; Japan Paper Co., 17 cs. from Havre, 111 cs. Kobe, 3 cs. Southampton and 14 cs. Rotterdam; G. W. Sheldon & Co., 2 cs. from Havre; Cheramy, Inc., 2 cs. from Havre; P. H. Petry & Co., 4 cs. from Havre; S. Gilbert, 3 cs. from Bremen; Henschel, Naeve & Co., 19 cs. from Bremen; T. Johnson, 5 cs. from Gothenburg; Gerhard & Hey, 8 cs. from Havre; Iwai & Co., 24 cs. from Kobe; Robert Wilson Paper Corp., 9 cs. from Glasgow; E. J. Calvin, 12 rolls from Gothenburg; D. F. Young, 10 cs. from Bremen and 3 cs. Hamburg; J. J. Shore & Co., 2 cs. from Hamburg; Atlantic Forwarding Co., 13 cs. from Hamburg; Bush Service Corp., 10 cs. from Bremen; Globe Shipping Co., 144 cs. from Bremen and 19 cs. Hamburg; American Express Co., 3 cs. from Havre and 115 cs. Hamburg; International Forwarding Co., 4 cs. from Hamburg and 16 cs. Antwerp; Phoenix Shipping Co., 85 cs. from Hamburg; Titan Shipping Corp., 2 cs. from Hamburg.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 51752—Paper, all kinds. Santo Domingo, Dominican Republic. Agency desired.

No. 51796—Wrapping paper. Santo Domingo, Dominican Republic. Agency desired.

No. 51818—Wrapping paper. San Juan, P. R. Agency desired.

No. 51895—Cardboard box tops. Port Elizabeth, South Africa. Purchase desired.

No. 51865—Glassine, or other transparent cellulose sheeting. Bordeaux, France. Agency desired.

No. 51848—Printing paper. Tegucigalpa, Honduras. Agency desired.

No. 51841—Toilet paper in rolls. Port Said, Egypt. Agency desired.

No. 51886—Writing and better grade printing paper. Aachen, Germany. Purchase desired.

No. 51888—Writing and wrapping paper, and envelopes. Khartoum, Egypt. Purchase and agency desired.

No. 52010—Crepe toilet paper. Tientsin, China. Agency desired.

No. 51953—Insulating wood fiber boards. Hamburg, Germany. Agency desired.

No. 51959—Wrapping and other paper, and paper bags. Santo Domingo, Dominican Republic. Agency desired.

No. 52130—Photo-engraving paper. Toronto, Canada. Agency desired.

No. 52198—Chemical wood pulp. Milan, Italy. Agency desired.

No. 52132—Wrapping paper. Montreal, Canada. Agency desired.

Orr Felts

We venture that you pay mighty close attention to the B. T. U. in the coal you buy, the grade of oil you use for lubrication, or the rate you pay for power—and why shouldn't you?

Do you also try just as hard to get the exact kind of felts your job should have—the one make that will do the best extracting job and wear the longest?

We, at ORRS, know, and can bring the evidence to support us, that ORR FELTS will take out water faster and last longer than other felts—thereby prove their greater desirability.

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Full line of textures and sizes. A felt for every mill requirement.

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THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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DRAPER BROTHERS COMPANY

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TRIUNE and MULTIPLE PLY

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Fine Faced "English Woven" Felts for Fine Papers in Three, Four, Five and Six Ply 60 inches to 288 Inches in Width.

ABSOLUTELY NO FELT MARKS IN PAPER

TRIUNE Three Ply Felts for extra long service and large production

Beginning Another Century

For 100 years, written communications from the Philadelphia Quartz Company, Philadelphia, have borne the quaint salutation, "Respected Friend." Although times have wrought many changes, those who have guided the company's affairs during all these years have never seen fit to relinquish this salutation. In this simple phrase one senses that dignified courtesy with which Joseph Elkinton endeavored always to align his business practices.

On July 21, 1931, Philadelphia Quartz Company will officially mark its entry into the second century of business. On that same date in 1831, a factory was founded by one Joseph Elkinton in Philadelphia for the manufacture of soap and candles. For 30 years, these were the chief items of the plant, but in 1861 there was begun the manufacture and sale of a product which was destined to displace the others and to become commercially important. The product was silicate of soda. Over a period of years, the soap and candle end of the business was gradually overshadowed by the growing production and sale of silicate. In 1904, soap production ceased and soluble silicates became the exclusive products of the company.

The first location was a combined store and dwelling. A few years later, expansion of the soap and candle business was noted by the erection of a factory in the rear of the premises. Barter and exchange having been the general practice of the day, entries in Joseph Elkinton's books show many transactions in coffee, cordwood, coal, sand, grease, "barilla," carpet, etc. Also foodstuffs such as butter, pork, flour, etc. All of these goods had to be disposed of before a profit had been realized on the original sale of soap or candles. Joseph Elkinton conducted the business himself for almost 20 years and then was joined by his sons, Joseph S., Asa and Thomas. When Joseph S. Elkinton was taken into the firm, in 1855, the name was changed to Joseph Elkinton & Son.

Early in 1858, equipment was purchased which was apparently intended either for manufacturing or experimenting with silicate. Mixtures of silicate of soda and soap had been tried and were found useful. The experiments of the Elkintons to prove the value of silicate as a detergent evidently attracted the attention of other soap makers, for in the first month of 1861 the company's books recorded a sale of three barrels of the new product. Soon the manufacture of silicate, in the original soap factory, appeared to be supplanting the manufacture of candles, use of the latter having fallen off owing to the introduction of kerosene.

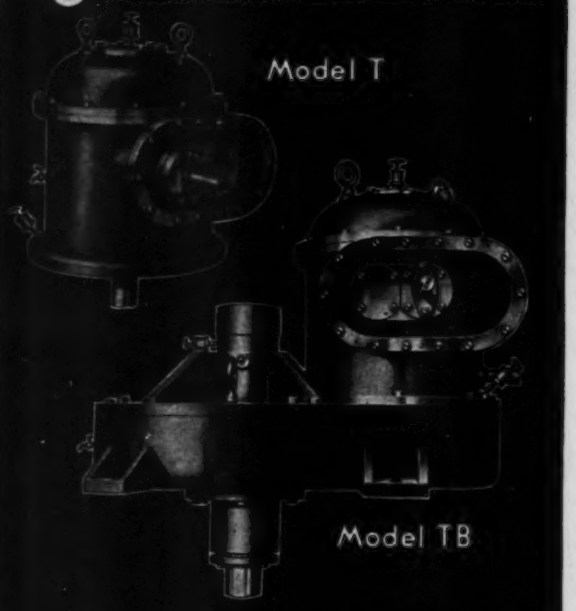
In January, 1862, the founder withdrew from the business, leaving it to be conducted by Joseph S. and Thomas Elkinton under that name. A few months later the first of the company's informative bulletins appeared, these having since become quite familiar wherever silicate is used. The first bulletin listed soda lye, candles, cracklings, clothes bluer, starch and alkaline fertilizer along with silicate and 15 varieties of soap.

The first plant expansion came in 1864 when a new factory was set up at Ninth and Mifflin streets, Philadelphia. This was the first of nine plants which have since been added to the Philadelphia Quartz group. A partnership was then formed to trade as Philadelphia Quartz Co., the first time the present company title was used. This new plant was to specialize on silicate of soda, the soap business having been continued at the old plant under the Elkinton firm name. In 1868 the partners, Greacen and Booth sold their interests to the Elkintons.

Shortly after, the company employed Charles W. Goudy, a soap maker from Marshalltown, Iowa, to demonstrate the use and value of silicate in soap factories throughout the country. He had previously been an exceptionally large buyer of Philadelphia Quartz products. Charles Goudy traveled with a miniature soap plant with which he could make samples of silicated soap in the buyers' presence and was also prepared to go into the factory for large scale demonstrations. Silicate of soda sales soon began to show marked increases under this new selling method.

Although the adhesive value of silicate was already well-known and there had been some use of the product for such

NEW ENGLAND
Agitator Drives



- in standardized models for the most efficient application to stirrers for stock chests-clay and size mixers - color and coating mixers - dissolving alum - deinking and defibering news stock.

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Fully enclosed - continuous self lubrication - quiet running - anti-friction bearings throughout - oil trapped against leakage - high efficiency - utmost economy of operation.

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We reached the **OBJECTIVE** and have held our position against all efforts toward imitation.

TENAX is still **SUPREME.**

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COMPANY INC.
40 State St., Ansonia, Conn.

PAPER MACHINERY

CALENDERS: Board
CALENDERS: Paper
CALIPERS: Roll
GRINDING MACHINES: Roll
PRESSES: Hydraulic
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Pulp Dehydrating
ROLLS: Chilled Iron, Dry Sand, Gray Iron, Alloy Iron, Steel
For: Calender Stacks
Board Calenders
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Glassine Calenders
Friction Rolls
Breaker Rolls
Smoothing Rolls
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Paraffining and Waxing Machines
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Silicating Machines
Miscellaneous Special Purposes
TRANSMISSION MACHINERY
Gears, Cut: Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
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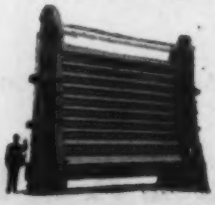
See PAPER AND PULP MILL CATALOG or LOCKWOOD'S DIRECTORY — 1931



Farrel Chilled Iron Rolls combine maximum strength with notable hardness, flawlessness of surface and extreme accuracy. Paper Finishing Calender Stacks in all sizes up to 298" face, equipped with electric, hydraulic or ratchet lift, all operated from the floor. Other uses listed above.

NEW RECORDS FOR PRODUCTION AND PRECISION ARE MADE ON FARREL-BIRMINGHAM MACHINES

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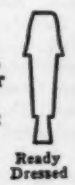
LABOR SAVING—TIME SAVING

THE MOST ECONOMICAL FILLING THAT CAN BE PUT IN A MORTISE WHEEL



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WE MAKE ANY STYLE OR SIZE WANTED
WRITE FOR INSTRUCTION SHEET "O" WHICH IS FREE

QUICK SERVICE ON ALL SIZES
THE N. P. BOWSHER CO., So. Bend, Ind.

purpose, it was with the introduction of the corrugated shipping box in the early nineties that a larger demand for silicate as an adhesive was created. Simultaneously came the use of silicate for laminated fiber sheets and wall board.

William T. Elkinton, who is the present chairman of the Board, joined the company in 1879. Alfred C. Elkinton, now president of the Philadelphia Quartz Co. of California, came shortly after. In 1904, the company was incorporated as Philadelphia Quartz Co. and the manufacture of soap was discontinued. Since then all efforts have been concentrated on developing the manufacture and uses of silicate of soda. When it was learned that the proportions of ingredients could be varied to produce widely different properties, useful applications for silicate in many other industries were progressively discovered and this is still going on. The catalogue of silicates today includes 33 grades, and still new combinations claim study and experiments to meet the needs of ever new conditions in industry. On the threshold of another century, the pioneering spirit still dominates as again the company introduces for the first time in commercial form a new industrial alkali, sodium metasilicate. It is not entirely visionary to expect the developments and improvements in silicates of soda in the second century to equal or surpass those which marked the first.

Silicate of soda is a very low priced commodity. Its place in industry depends upon the refinement of economy both in production and delivery. This dictates the location of plants close to consuming markets. Of these the Philadelphia Quartz Company now has nine, located, after scientific study not only of raw material sources but most favorable delivery conditions, at Chester, Pa., Anderson, Ind., Baltimore, Md., Gardenville, N. Y., Kansas City, Kan., Rahway, N. J., St. Louis, Mo., Utica, Ill., Berkeley, California, (Philadelphia Quartz Company of California).

The general headquarters of the company are at 121 S. Third street, Philadelphia, where the engineering and chemical staffs are available for consultation with those who have need of facts to help them apply in industry one or more of the numerous commercial grades of silicate of soda.

Fisher Governor Marks Fiftieth Anniversary

In 1880 a partnership originally formed by William Fisher, inventor of the pump governor, and George Beebe, was incorporated as a company in 1881, and the Fisher Governor Co. (Inc.) has been in continuous and successful operation since that date.

The company first manufactured the pump governor and pressure reducing valve, securing wide recognition in the steam industry. As the business grew and expanded the lever valve, exhaust relief valve, back pressure valve, steam trap and various adaptions of these devices were added to the line of products. Later, the Fisher policy of building every specialty to meet the exact conditions of the installation was adopted. The company's modern plant at Marshalltown, Iowa, and its place today among the leaders of automatic control specialty manufacturers speaks for the efficacy of the company's policy and its products.

To mark its fiftieth anniversary, the Fisher Governor Company announces another advance step—the opening of a new branch factory in Los Angeles, Calif. This factory will be under the immediate charge of Jasper H. Fisher, chairman of the company's board of directors, and Ray McCoy, factory manager, who has been an inspector in the Marshalltown plant for the past 18 years. The office of the new branch will be in charge of Forest Wehrman, who has been connected with the accounting department of the main office for several years.

Arno W. Nickerson has joined the research engineering department of the Robert Gair Company, 420 Lexington avenue, New York City. Since 1917, Mr. Nickerson has been associated with Process Engineers Inc., of 501 Fifth avenue, more recently as treasurer and director. He has served as consultant on paper to chemical companies supplying the paper industry and has specialized in development work in connection with paper manufacture.

Jones

A name that has won a world-wide reputation through 75 years devoted to paper-making progress

*

"Today, in the paper industry, many manufacturers are anxiously awaiting for something to turn up that will improve their particular condition without the necessity of making any added capital investment; but they are not reaching out to obtain information on improved processes and they are even eliminating research investigators from their organizations."—Paper Trade Journal—April 2, 1931 issue.

*

Business today, is a matter of the survival of the fittest. Your problem is to make a better finished product at a low cost. To do this, modern methods are required. Why not reach out and obtain information on improved processes by letting one of our engineers, without obligation, give you facts on the newest methods used in paper manufacturing? He will give you the benefit of our seventy-five years' experience in making paper machinery always the most modern in design. Why not write us today?

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PAPER-MAKING MACHINERY
E.D. JONES & SONS COMPANY
ESTABLISHED 1856
PITTSFIELD, MASS.

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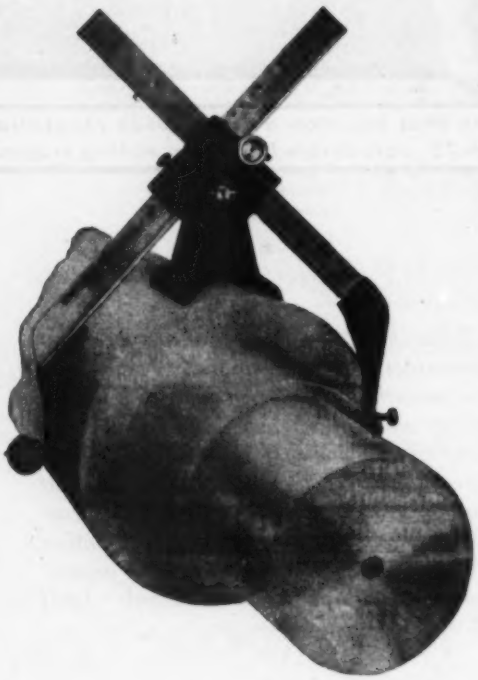
PITTSFIELD · MASSACHUSETTS
BUILDERS OF HIGH GRADE MACHINERY FOR PAPER MILLS



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IMPROVED MICROMETER ROLL CALIPER

An indispensable instrument to the mill equipped to do its own regrinding and equally useful in every mill in keeping an accurate check on the condition of the calender and press rolls.

LIGHT WEIGHT
EASILY ADJUSTED
EXTREMELY ACCURATE

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

ALLIGATOR

TRADE MARK REG U.S PAT OFFICE

STEEL BELT LACING

More Reliable Belting Service

The great surplus strength of Alligator Steel Belt Lacing provides long uninterrupted belting service. The powerful compression grip produced in clinching the teeth, prevents friction and ply separation in the belt ends. This favorite lacing is quickly and easily applied and is reliable in practically every service on all types of flat belting. Sold throughout the world.

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